

**FY16**

<u>Description</u>	<u>Approval</u>	<u>Closure</u>
Base Growth – Install Main	Page 1 of 238	Page 10 of 238
Base Growth – Install Services		
Base Growth - Install Meter/Regulator		
Base Growth – Fitting		
Base Growth – Sales Fullfillment		
Base Growth – Meter Purchase/Operations	Page 16 of 238	Page 25 of 238
Purchase Meters Replacement		
Gas Expansion	Page 30 of 238	Page 40 of 238
Gas System Reinforcement	Page 46 of 238	Page 58 of 238
BS HP Leak Prone Service	Page 63 of 238	Not Required
CI Joint Encapsulation	Page 66 of 238	Page 74 of 238
City State Construction - Non Reimbursable	Page 80 of 238	Page 88 of 238
City State Construction – Reimbursable		
Corrosion	Page 95 of 238	Not Required
Leak Prone Pipe	Page 98 of 238	Page 117 of 238
Service Replacements – Leaks	Page 123 of 238	Page 132 of 238
Service Replacements –Non-Leaks/Other		
Main Replacement – Maintenance	Page 139 of 238	Not Required
Allens Ave Rebuild	Page 142 of 238	Project not complete
Gas Planning	Page 155 of 238	Page 165 of 238
Heater Program	Page 171 of 238	Not Required
I&R Reactive Programs/CNG	Page 174 of 238	Page 182 of 238
LNG	Page 188 of 238	Not Required
	Page 191 of 238	Not Required
Pressure Regulating Facilities	Page 194 of 238	Page 203 of 238
System Automation	Page 209 of 238	Page 217 of 238
Combustible Gas Indicators	Page 222 of 238	Page 231 of 238
Equipment & Tools	Page 236 of 238	Not Required



**Short Form Sanction Paper**

<b>Title:</b>	FY16 Growth Capital Plan- Rhode Island Gas	<b>Sanction Paper #:</b>	USSC-15-099
<b>Project #:</b>	CRCC102, CRCC104, CRCC110	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	03/25/2015
<b>Author:</b>	Peter Duggan	<b>Sponsor:</b>	Sean Mongan, VP Sales & Program Operations
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Kevin Rennick

**1 Executive Summary**

**1.1 Sanctioning Summary**

This paper requests sanction of CRCC102, CRCC104, CRCC110 in the amount \$16.910M with a tolerance of +/- 10% for the purposes of full sanction.

*This sanction amount is \$16.910M broken down into:*

- \$16.829M Capex*
- \$0.000M Opex*
- \$.081M Removal*
- With a CIAC/Reimbursement of \$2.173*

**1.2 Project Summary**

This program involves the installation of new main, services and meters to serve projected customer growth in the Rhode Island gas territory. The \$16.910M for FY16 will fund two parts of the growth program: (1) the installation of 1,698 services and (2) the installation of 58,080 feet of main associated with new customers.

**2 Project Detail**

This section should include project background, drivers, business issues and any other pertinent information in sufficient for the reader to determine why this should be done now and at this cost.



## **Short Form Sanction Paper**

### **2.1 Background**

The Customer Organization is responsible for managing new gas customer connection requests and with other organizations delivers the service in a timely and efficient process. The last two years, Nationalgrid has seen the customer demand exceed our resource capability to deliver. In FY16, with collaboration across multiple organizations that have a customer touch point, we have worked with the resource coordination team to build a growth plan in line with the entire gas work plan at a level that we can deliver to our customers and increase customer satisfaction.

This plan is intended to provide service for over 1,698 new gas customer accounts in Massachusetts. The projected company annual revenue for the Rhode Island territory is \$2.955M for the FY16 plan.

### **2.2 Drivers**

As a regulated utility we are required to offer delivery of service to prospective customers while obtaining a return on our investment that allows us to be profitable.

There are several factors that drive overall NDR projections and the associated capital/O&M expenditures:

- Rate Plans
- Fuel Pricing – oil versus natural gas
- Inventory levels and turnover ratios
- Saturation levels
- Marketing Lead performance
- Designs and resourcing that supports the delivery of capital at efficient pricing.
- Economic Conditions / Building Starts
- Gas system constraints

### **2.3 Project Description**

The proposal is intended to establish the FY16 Customer NDR (New Delivery Revenue) goal, \$2.955M, and the accompanying capital budgets of \$16.838M. The document takes into account current, and projected, market and pricing conditions and contains provisions should conditions worsen.

### **2.4 Benefits**

We will be delivering clean, safe and affordable natural gas to residents and businesses in the state of Massachusetts. There is an environmental impact in regards to the reduction of oil as a heating fuel for these customers. The revenue delivery for the 15/16 plan is \$2.955M, and the accompanying capital budgets of \$16.910M.



## **Short Form Sanction Paper**

### **2.5 Business & Customer Issues**

Nationalgrid is balancing our commitment to deliver gas to new customers but have put the greatest emphasis on some of our mandated programs for FY16 to ensure we continue to offer safe and reliable service to our existing customers. The new customer demand exceeded our resource capabilities in FY15 and FY14 so we have developed the FY16 plan at a level that we think we can deliver while remaining fiscally balanced. This may result in shutting down our new customer commitments earlier in the year than the past and resulting in new commitments for FY17.

### **2.6 Alternatives**

**Alternative 1:** Keep plan in line with FY14. – This would deliver more services and main, we would spend more capital and add more revenue but at the risk of disappointing customers and falling short on our mandated programs.

**Alternative 2:** Focus only on prospective customers on main – This would have us focusing on bringing on main customers only. This would reduce the amount of main to be installed and lower our capital costs. This would probably have implications with the DPU and our prospective customers. This would also negatively affect our revenue.

### **2.7 Investment Recovery**

Investment recovery will be handled through regular rate recovery mechanisms.

#### **2.7.1 Customer Impact**

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$3.534M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.



**Short Form Sanction Paper**

**3 Related Projects, Scoring, Budgets**

**3.1 Summary of Projects**

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRCC102	Project Type	New Business Residential	10.345
CRCC104	Project Type	New Business Commercial	4.579
CRCC110	Project Type	Growth Main Reactive	1.986
<b>Total</b>			<b>16.910</b>

**3.2 Associated Projects**

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRTC304		Meter Purchases	1.063
CRCC111		Gas System Reinforcement	5.576
C054484, C054487		Expansion Program	3.000

**3.3 Prior Sanctioning History**

N/A

**3.4 Category**

Category	Reference to Mandate, Policy, NPV, or Other
<input checked="" type="radio"/> Mandatory	Regulatory agreements require National Grid to provide gas service and main. National Grid provides gas service using consistent up charge processes with targeted IRR returns across the portfolio.
<input type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	
<input type="radio"/> Other	



**Short Form Sanction Paper**

**3.5 Asset Management Risk Score**

Asset Management Risk Score:   49  

**Primary Risk Score Driver: (Policy Driven Projects Only)**

- Reliability     
 Environment     
 Health & Safety     
 Not Policy Driven

**3.6 Complexity Level**

- High Complexity     
 Medium Complexity     
 Low Complexity     
 N/A

Complexity Score:   15  

**3.7 Next Planned Sanction Review**

Date (Month/Year)	Purpose of Sanction Review
June 2016	Closure

**4 Financial**

**4.1 Business Plan**

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY16-20 Gas Budget File	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input checked="" type="radio"/> Under <input type="radio"/> NA	\$1.694

**4.1.1 If cost > approved Business Plan how will this be funded?**

N/A

**4.2 CIAC / Reimbursement**



**Short Form Sanction Paper**

\$M	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
CIAC/Reimbursement	0.000	2.173	0.000	0.000	0.000	0.000	0.000	2.173

CIAC calculated based on historical experience.

**4.3 Cost Summary Table**

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total		
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +			
					2015/16	2016/17	2017/18	2018/19	2019/20	2020/21			
CRCC101	New Business Residential	Est Lvl (e.g. +/- 10%)	CapEx	-	10.264	-	-	-	-	-	-	10.264	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	0.081	-	-	-	-	-	-	-	0.081
			Total	-	10.345	-	-	-	-	-	-	-	10.345
CRCC104	New Business Commercial	Est Lvl (e.g. +/- 10%)	CapEx	-	4.579	-	-	-	-	-	-	4.579	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	-	-	
			Total	-	4.579	-	-	-	-	-	-	-	4.579
CRCC110	Growth Reactive	Est Lvl (e.g. +/- 10%)	CapEx	-	1.986	-	-	-	-	-	-	1.986	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	-	-	-	-	-	-	-	-	
			Total	-	1.986	-	-	-	-	-	-	-	1.986
Total Project Sanction			CapEx	-	16.829	-	-	-	-	-	-	16.829	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	0.081	-	-	-	-	-	-	0.081	
			Total	-	16.910	-	-	-	-	-	-	16.910	

**4.4 Project Budget Summary Table**

**Project Costs per Business Plan**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
CapEx	0.000	18.446	0.000	0.000	0.000	0.000	0.000	18.446
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.158	0.000	0.000	0.000	0.000	0.000	0.158
Total Cost in Bus. Plan	0.000	18.604	0.000	0.000	0.000	0.000	0.000	18.604

**Variance (Business Plan-Project Estimate)**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
CapEx	0.000	1.617	0.000	0.000	0.000	0.000	0.000	1.617
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.077	0.000	0.000	0.000	0.000	0.000	0.077
Total Cost in Bus. Plan	0.000	1.694	0.000	0.000	0.000	0.000	0.000	1.694



**Short Form Sanction Paper**

**5 Key Milestones**

<b>Milestone</b>	<b>Target Date: (Month/Year)</b>
Sanction Paper Approval	March 2015
Begin Work	April 2015
Complete Work	March 2016
Close-out	June 2016

**6 Statements of Support**

**6.1.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

<b>Role</b>	<b>Individual</b>	<b>Responsibilities</b>
<i>Investment Planning</i>	Pat Pensabene	Endorses relative to 5-year business plan or emergent work
Resource Planning	Artie Georgacopoulos	Endorses Resources, cost estimate, schedules
Project Management	Timothy Moore	Endorses resources, cost estimate, schedule

**6.1.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

<b>Reviewer List</b>	<b>Individual</b>
Finance	Horowitz, Philip Fowler, Keith
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Brown, Laurie
Procurement	Art Curran
Control Center	Mark J. Eagan

**6.1.3 List References**

N/A



**Short Form Sanction Paper**

**7. Decisions**

The US Sanctioning Committee (USSC) at a meeting held on March 25, 2015:

- (a) APPROVED this paper and the investment of \$16.910M and a tolerance of +/- 10%
- (b) NOTED that Sean Mongan has the approved financial delegation.
- (c) NOTE: In the event that any Blanket projects are not approved prior to the start of the FY17 fiscal year, the FY16 approval limits will remain in effect until such time as the FY17 blanket projects are approved by USSC and/or other appropriate authority for approval.

Signature.....*Margaret Smyth*.....Date.....*4/14/15*.....

Margaret Smyth  
US Chief Financial Officer  
Chair, US Sanctioning Committee



***Short Form Sanction Paper***

**8 Other Appendices**

**8.1 Sanction Request Breakdown by Project**  
**N/A**



**USSC Closure Paper**

<b>Title:</b>	FY16 Growth Capital Plan - Rhode Island	<b>Sanction Paper #:</b>	USSC-15-099C
<b>Project #:</b>	Various (See Appendix)	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	3/30/2017
<b>Author:</b>	David Mirabella	<b>Sponsor:</b>	James A. Cross, Jr., VP Sales & Program Operations
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Kevin Rennick, Steve Lannon, Bill Mycroft, Stephanie Eddleston

**1 Executive Summary**

This paper is presented to close various projects (see appendix). The total spend was \$13.326M. The sanction amount is \$16.910M.

*The final spend amount is \$13.326M broken down into:*

*\$13.144M Capex*

*\$0.000M Opex*

*\$0.182M Removal*

*With a CIAC/Reimbursement of \$0.838M CIAC*

**2 Project Summary**

This program involves the installation of new main, services and meters to serve projected customer growth in Rhode Island. The original sanction document requested \$16.910M for FY16 to fund two parts of the growth program: (1) the installation of 1,698 services and (2) the installation of 58,080 feet of main associated with new customers.

**3 Over / Under Expenditure Analysis**

**3.1 Summary Table**



**USSC Closure Paper**

Actual Spending (\$M)			
Project #	Description		Total
Various	(See Appendix)	Capex	13.144
		Opex	0.000
		Removal	0.182
		<b>Total</b>	<b>13.326</b>
Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	16.829
		Opex	0.000
		Removal	0.081
		<b>Total Cost</b>	<b>16.910</b>
Sanction Variance (\$M)			Total Spend
		Capex	3.685
		Opex	0.000
		Removal	(0.101)
		<b>Total Variance</b>	<b>3.584</b>

**3.2 Analysis**

The total annual spend for the program was lower by ~21% than the sanctioned amount of \$16.910M. The reason for this variance is lower main footage completed than planned. From a unit perspective, there were 14 fewer actual New Services ( 1,684 vs 1,698) than plan while New Main was 29,040 ft less than plan (29,040 vs. 58,080). Actual units for number of services were on plan and feet of main were 50% of plan.

**4 Improvements / Lessons Learned**

Unit costs are being updated to improve the accuracy of project estimating. Improvements to track project costs have provided for better accuracy of year-end spending projections. The Monthly Zero Variance and PCM meetings instituted in FY17 will ensure that sanctioned spending levels are not exceeded without executive approval.



**USSC Closure Paper**

**5 Closeout Activities**

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) All work orders and funding projects have been closed  
Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:
- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed .
  - construction may cross multiple fiscal years
  - the work order closing process is within the late charge waiting period
  - other accounting processes or final system closing activities have not yet completed

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

- (2) All as-builts have been completed  
Program/Blanket projects may contain work orders for which no as-builts have yet been recorded for reasons including but not limited to:
- design and/or construction have not yet completed
  - construction may cross multiple fiscal years



**USSC Closure Paper**

- work has completed recently and as-builts have not yet been processed into the system
- does not apply. Work order(s) are not linked to work management systems. (example: Meter Purchases, Meter Changes, AMR Installations Purchase Misc Capital Tools/Equipment, etc.)
- does not apply to Information systems projects.

(3) All lessons learned have been entered appropriately into the lesson learned database

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

**6 Statements of Support**

**6.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibilities
S&PO	Jim Cross	Sponsor
Investment Planning	Pat Pensabene	Endorses relative to 5 year business plan
Resource Planning	Jonathon Falls	Endorses resources, cost estimate, schedule and portfolio alignment
Project Management	Bradley Wheeler	Endorses resources, cost estimate, schedule
Gas Project Estimation	Art Paul	Endorses Cost Estimate

**6.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

Function	Individual
Finance	Patricia Easterly
Regulatory	Peter Zschoke
Procurement	Art Curran
Jurisdictional Delegate	John Currie
Control Center	Mark Eagan



**USSC Closure Paper**

**7 Decisions**

The US Sanctioning Committee (USSC) approved this paper on March 30, 2017.

*Ross W. Turrini*  
Signature \_\_\_\_\_ Date.....  
Ross Turrini – SVP Gas Process & Engineering and Group Chief Engineer

**USSC Closure Paper**



**8 Appendix**

Sanction Paper Number	FP Proj No	FP Proj Descr	Capex	Opex	Removal	Total
USSC-15-099	C043732	RIDOT I-195 CONT 14&15 - NEW MAIN	\$5,420	\$0	\$0	\$5,420
	CON0009	OCEAN ST-DIST-LAND/RIGHTS BLANKETS	\$17,079	\$0	\$0	\$17,079
	CON0050	RI-GAS-MAIN NEW GRWTH-RI BLANKET	\$20,371	\$0	\$870	\$21,241
	CON0054	RI-GAS-NEW SERV INST-RI BLANKET	\$49,018	\$0	(\$763)	\$48,255
	CON0058	RI-GAS-NEW MTR SM-RI BLANKET	\$851,884	\$0	\$97,344	\$949,228
	CRCC102	NEW BUS - RES - RI	\$7,361,959	\$0	\$46,176	\$7,408,135
	CRCC104	NEW BUS - COM - RI	\$4,838,634	\$0	\$38,333	\$4,876,967
<b>USSC-15-099 Sum</b>			<b>\$13,144,365</b>	<b>\$0</b>	<b>\$181,961</b>	<b>\$13,326,325</b>



**Short Form Sanction Paper**

<b>Title:</b>	FY16 Purchase Gas Meters – Rhode Island	<b>Sanction Paper #:</b>	USSC-15-091
<b>Project #:</b>	CRTC304	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	3/10/2015
<b>Author:</b>	Marina Perrone	<b>Sponsor:</b>	Rob Sheridan, Dir. Utility of the Future
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Marina Perrone

**1 Executive Summary**

**1.1 Sanctioning Summary**

This paper requests sanction of CRTC304 in the amount \$3.763M with a tolerance of +/- 10% for the purposes of full implementation.

This sanction amount is \$3.763M broken down into:

- \$ 3.763M Capex
- \$ 0.000M Opex
- \$ 0.000M Removal

**1.2 Project Summary**

This project provides funding for the purchase and test of gas meters and associated instrumentation.

**2 Project Detail**

**2.1 Background**

This project includes the purchase, test, processing, and delivery of gas meters to support the Narragansett Electric Company mandated Meter Test/Replacement Program, growth targets, and continued CMS Operations.

**2.2 Drivers**

The primary driver for meter and metering instrumentation purchases is compliance with state regulations governing meter accuracy and measurement of gas usage for customer bills.



### **Short Form Sanction Paper**

Rhode Island PUC requirements stipulate removal from the field and testing of all residential gas meters that are 15 years old and all C&I meters that are 10 years old and associated remediation / retirement program of all such gas meters.

In addition to the mandated meter change program, meters are required to support growth targets, as well as to support Customer Meter Services (CMS) operational requirements (load change, meter and/or service relocations, damage, & stopped meters)

### **2.3 Project Description**

This project includes the purchase, test, processing, and delivery of gas meters to support The Narragansett Electric Company Mandated Meter Test/Replacement Program, growth targets, and continued CMS Operations

### **2.4 Benefits**

This project supports regulatory requirements, operations, and growth programs. In addition, the replacement of aging assets results is required to maintain and improve overall asset health (metering and billing accuracy).

### **2.5 Business & Customer Issues**

There are no significant business issues beyond what has been described elsewhere.

### **2.6 Alternatives**

#### **Alternative 1: Base Case – Leave as is**

This option is not viable as it would violate regulatory requirements, adversely impact customer satisfaction, and result in our inability to support growth targets.

#### **Alternative 2: Revise Project Size and Scope – Partial Deferral**

This option is not viable as it would result in a partial violation of regulatory requirements, or result in our inability to support growth targets.

### **2.7 Investment Recovery**



**Short Form Sanction Paper**

Investment recovery will be through standard rate recovery mechanisms.

**2.7.1 Customer Impact**

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.790M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

**3 Related Projects, Scoring, Budgets**

**3.1 Summary of Projects**

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRTC304		Purchase Gas Meters - Grth	1.063
CRTC304		Purchase Gas Meters - Mand	2.700
<b>Total</b>			<b>3.763</b>

**3.2 Associated Projects**

N/A

**3.3 Prior Sanctioning History**

N/A



**Short Form Sanction Paper**

**3.4 Category**

Category	Reference to Mandate, Policy, NPV, or Other
<input checked="" type="radio"/> Mandatory	Support Gas Meter requirements for Mandated Meter Change Program, and system growth targets
<input type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	
<input type="radio"/> Other	

**3.5 Asset Management Risk Score**

Asset Management Risk Score:   49  

**Primary Risk Score Driver: (Policy Driven Projects Only)**

- Reliability       Environment       Health & Safety       Not Policy Driven

**3.6 Complexity Level**

- High Complexity     Medium Complexity     Low Complexity     N/A

Complexity Score:   15  

**3.7 Next Planned Sanction Review**

Date (Month/Year)	Purpose of Sanction Review
July 2016	Closure Paper



**Short Form Sanction Paper**

**4 Financial**

**4.1 Business Plan**

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY16 – FY20 Capital Plan - Gas	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000

**4.1.1 If cost > approved Business Plan how will this be funded?**

N/A

**4.2 CIAC / Reimbursement**

\$M	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

**4.3 Cost Summary Table**

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total	
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
					2015/16	2016/17	2017/18	2018/19	2019/20	2020/21		
CRT304	Purchase Gas Meters - Grth	+/- 10%	CapEx	-	1,063	-	-	-	-	-	-	1,063
			OpEx	-	-	-	-	-	-	-	-	-
			Removal	-	-	-	-	-	-	-	-	-
			Total	-	1,063	-	-	-	-	-	-	-
CRT304	Purchase Gas Meters - Mand	+/- 10%	CapEx	-	2,700	-	-	-	-	-	-	2,700
			OpEx	-	-	-	-	-	-	-	-	-
			Removal	-	-	-	-	-	-	-	-	-
			Total	-	2,700	-	-	-	-	-	-	-
Total Project Sanction			CapEx	-	3,763	-	-	-	-	-	-	3,763
			OpEx	-	-	-	-	-	-	-	-	-
			Removal	-	-	-	-	-	-	-	-	-
			Total	-	3,763	-	-	-	-	-	-	-



**Short Form Sanction Paper**

**4.4 Project Budget Summary Table**

**Project Costs Per Business Plan**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2015/16	Yr. 2 2016/17	Yr. 3 2017/18	Yr. 4 2018/19	Yr. 5 2019/20	Yr. 6 + 2020/21	
CapEx	0.000	3.763	0.000	0.000	0.000	0.000	0.000	3.763
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total Cost in Bus. Plan</b>	<b>0.000</b>	<b>3.763</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>3.763</b>

**Variance (Business Plan-Project Estimate)**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2015/16	Yr. 2 2016/17	Yr. 3 2017/18	Yr. 4 2018/19	Yr. 5 2019/20	Yr. 6 + 2020/21	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total Cost in Bus. Plan</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

**5 Key Milestones**

Milestone	Target Date: (Month/Year)
Sanction Approval	March 2015
Provide Vendors with delivery schedules for FY15-16	March 2015
Monitor Inventory Levels	Monthly
Project Complete	March 2016
Project Closeout Report	July 2016



**Short Form Sanction Paper**

**6 Statements of Support**

**6.1.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

<b>Role</b>	<b>Individual</b>	<b>Responsibilities</b>	<b>Area</b>
Investment Planner	Pensabene, Patrick M	Endorses relative to 5-year business plan or emergent work	New England
Resource Planning	Georgacopoulos, Artie	Endorses Resources, cost estimate, schedule, and Portfolio Alignment	New England
Project Management	Moore, Timothy	Endorses Resources, cost estimate, schedule	All

**6.1.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

<b>Reviewer List</b>	<b>Individual</b>
Finance	Fowler, Keith
	Horowitz, Philip
Regulatory	Zschokke, Peter
Jurisdictional Delegates	Iseler, David G.
Procurement	Curran, Art
Control Center	Eagan, Mark J.

**6.1.3 List References**

N/A



**Short Form Sanction Paper**

**7 Decisions**

I:

(a) APPROVE this paper and the investment of \$3.763M and a tolerance of +/- 10%

(b) NOTE that Marina Perrone is the Project Manager and has the approved financial delegation.

Signature..........Date 2/12/2015

Executive Sponsor – Ross Turrini, Acting SVP Network Strategy



**Short Form Sanction Paper**

**8 Other Appendices**

**8.1 Sanction Request Breakdown by Project**

N/A



**USSC Closure Paper**

<b>Title:</b>	FY16 Purchase Gas Meters – Rhode Island	<b>Sanction Paper #:</b>	USSC-15-091C
<b>Project #:</b>	CON0063, CRTC304	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	January 10, 2017
<b>Author:</b>	Ryan Geiger	<b>Sponsor:</b>	John Stavrakas, VP Gas Asset Management
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Ryan Geiger

**1 Executive Summary**

This paper is presented to close CON0063 and CRTC304. The total spend was \$2.459M. The sanctioned amount for this project was \$3.763M.

*The final spend amount is \$2.459M broken down into:*

- \$2.415M Capex*
- \$0.000M Opex*
- \$0.044M Removal*

**2 Project Summary**

This project provides funding for the purchase and test of gas meters and associated instrumentation.

**3 Over / Under Expenditure Analysis**

**3.1 Summary Table**



**USSC Closure Paper**

Actual Spending (\$M)			
Project #	Description		Total Spend
CON0063	FY 16 Purchase Gas Meters - Rhode Island	Capex	2.415
		Opex	0.000
		Removal	0.044
		<b>Total</b>	<b>2.459</b>
CRTC304	FY 16 Purchase Gas Meters - Rhode Island	Capex	0.000
		Opex	0.000
		Removal	0.000
		<b>Total</b>	<b>0.000</b>
<b>Total</b>		Capex	2.415
		Opex	0.000
		Removal	0.044
		<b>Total</b>	<b>2.459</b>

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	3.763
		Opex	0.000
		Removal	0.000
		<b>Total Cost</b>	<b>3.763</b>
Sanction Variance (\$M)			Total Spend
		Capex	1.348
		Opex	0.000
		Removal	(0.044)
		<b>Total Variance</b>	<b>1.304</b>

**3.2 Analysis**

The estimated cost for shipping and handling the meters purchased under the program was inadvertently overstated in the FY16 Rhode Island Meter Purchase budget.



**USSC Closure Paper**

**4 Improvements / Lessons Learned**

The shipping and handling cost was adjusted lower for FY17 once the mistake was found.

Asset Management is currently working closely with Resource planning to track the money being spent and to improve project forecasts. These improvements to track project costs should result in more accurate spending projections when compared to actuals.

**5 Closeout Activities**

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

(1) All work orders and funding projects have been closed  
Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:

- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed .
- construction may cross multiple fiscal years
- the work order closing process is within the late charge waiting period
- other accounting processes or final system closing activities have not yet completed



**USSC Closure Paper**

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

(2) N/A

(3) All lessons learned have been entered appropriately into the lesson learned database

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

**6 Statements of Support**

**6.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibilities
Investment Planner	Pensabene, Patrick M.	Endorses relative to 5-year business plan or emergent work
Resource Planning	Falls, Jonathon	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Fortier, Joseph "JT"	Endorses Resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Endorses Cost Estimate

**6.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

Function	Individual
Finance	Easterly, Patricia
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul



**USSC Closure Paper**

**7 Decisions**

I approve this paper.

Signature *Ross W. Turrini*

Date April 27, 2017

Executive Sponsor – Ross Turrini, Senior Vice President, Gas Process & Engineering  
and Chief Gas Engineer



**Short Form Sanction Paper**

<b>Title:</b>	FY2015 Rhode Island Gas Expansion Pilot Program	<b>Sanction Paper #:</b>	USSC-14-160
<b>Project #:</b>	C054484, C054487	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	4/8/2014
<b>Author:</b>	Walter Fromm & Jackson Lehr	<b>Sponsor:</b>	Sean Mongan
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Jackson Lehr

**1 Executive Summary**

**1.1 Sanctioning Summary**

This paper requests sanction of C054484, C054487 in the amount of \$3.015M with a tolerance of +/- 10% for the purposes of full implementation to install new mains associated with the Gas Expansion Pilot Program in Rhode Island under the FY 2015 ISR Plan.

*This sanction amount is \$3.015M broken down into:*

- \$3.015M Capex*
- \$0.000M Opex*
- \$0.000M Removal*
- With a CIAC /Reimbursement of \$.015M*

**1.2 Project Summary**

This program involves the installation of new main to serve new customers as part of the FY2015 Gas Expansion Pilot Program. It is anticipated that the proposed \$3.000M will fund the installation of roughly 20,000 feet of new gas main to provide access to gas for approximately 400 potential customers, of which approximately 100 will initially take service. It is important to note that this is a pilot program testing a new approach to gas expansion, aligned with the strategic build-out approach. Results could vary significantly depending on a number of factors including customer participation and the actual combination of projects pursued.

**2 Project Detail**

**2.1 Background**

The recent abundance of natural gas supply has led to historically low commodity prices and a long-term forecast showing a substantial, sustained price differential between



### **Short Form Sanction Paper**

natural gas and heating oil. A number of states have recognized this market shift and are now pursuing or examining programs that would expand the availability of natural gas as an energy source within their jurisdictions. Currently, in Rhode Island, customers may be required to pay a Contribution In Aid of Construction ("CIAC") to help cover the costs associated with main extensions required to provide them gas service. This upfront capital cost can present a significant barrier for potential customers. The Gas Expansion Pilot Program, first introduced in FY2014, seeks to dramatically reduce this impediment by supporting projects that have the opportunity to bring gas service to more customers where the costs described above would otherwise have acted as a barrier.

As part of the FY2014 Gas Infrastructure, Safety & Reliability ("ISR") Program in Rhode Island, the Commission approved (for the first time) a \$3.000M Gas Expansion Pilot which was focused on expanding the gas distribution system to remove or reduce financial barriers that may prevent residential and commercial customers from taking advantage of historically low gas commodity prices. In spite of intensive marketing and outreach efforts for the FY2014 ISR Gas Expansion Pilot Program, only two small, partial projects were able to move forward, serving six and seven new customers, respectively. A review of these efforts and feedback from customers identified several major lessons which form the basis of the proposed changes and modifications to the FY2015 pilot program designed to simplify the process and program for customers.

*Lesson #1* Offers to customers that vary based on the number of participating customers are too complicated and the uncertainty forms a major barrier to participation

**Issue: Need to provide a simple, fixed offer to customers**

*Lesson #2:* Customer economics remain strained by the customer conversion costs alone and there is very little room, if any, for additional costs such as CIACs

**Issue: Need to provide a special, significantly reduced offer for the pilot program**

*Lesson #3:* Customer interest can vary significantly project to project and within projects, as well as beyond projects

**Issue: Need to provide criteria that enable flexibility to respond to customer interest**

## **2.2 Drivers**

The primary driver is the approved FY2015 Gas ISR Plan, which includes the Gas Expansion Pilot Program.



## **Short Form Sanction Paper**

### **2.3 Project Description**

The FY2015 Gas Expansion Pilot Program seeks to implement the following modifications based on the key learnings from the FY2014 Pilot, specifically:

#### Simplified project eligibility criteria

- Introduce a Density Test - Maximum of 70 feet of main per prospective customer\*
- Modify the Commitment Requirement - A minimum of 10% of prospective customers must commit, and minimum of three customers must commit (relevant for very small projects)
- Modify the CIAC requirements by introducing a modest fixed charge for participation in the Gas Pilot Program (e.g. \$950 vs. \$800 standard service fee) in lieu of the variable CIAC based on number of committed customers
- Provide the complete cost of the main expansions from the ISR Gas Expansion Pilot Program funds with service fee premiums credited to customers in the next ISR reconciliation filing.
- The previously identified FY2014 projects will remain eligible for the revised FY2015 program with the projects to be pursued in the order of density.
- Add a market-based approach to the program by reserving a portion of the Gas Expansion pilot funds, \$.750M, of the \$3.000M, for those customer-initiated projects that meet the eligibility criteria. This will provide the Company with the necessary flexibility to address both proactive and reactive identified projects.
- Plan includes \$3.000M in FY2015 to support the revised Gas Expansion Pilot Program with any unspent FY2014 funds to be returned to customers in the FY2014 reconciliation filing.

*\*Cross referencing with the prior project list for the FY2014 pilot, the pool of potential projects meeting this density threshold is over 33 projects, with over 5,000 prospective customers, which can be served with over 60 miles of main. Such a project pool would provide sufficient opportunity for FY2015 and beyond.*

### **2.4 Benefits**

This gas expansion pilot has been developed to deliver new revenue to the company while earning an anticipated return on the pilot main investments in line with the expected returns for the ISR plan as a whole. The pilot main will enable growth services this year and beyond, with returns in line or potentially above our typical on-main growth services. We will be delivering clean, safe and affordable natural gas to residents and



### ***Short Form Sanction Paper***

businesses in the state of Rhode Island. There is an environmental benefit in regards to the reduction of oil as a heating fuel for these customers. There is also an economic development benefit associated with the fuel cost savings as well as the construction work itself. The environmental and economic development benefits have not been quantified at this time.

#### ***2.5 Business & Customer Issues***

The primary issues with this plan are in regards to resource capacities. The pilot program is included in the resource plan, however, it is relatively new and incremental to a still growing amount of traditional growth work. The volume of work could impact our delivery to customers and put our costs at risk if we have to deliver the mains and associated services with more contractors and or on overtime.

#### ***2.6 Alternatives***

**Alternative 1:** Do nothing, which was not a viable alternative because the pilot program is included in the approved ISR Plan.

#### ***2.7 Investment Recovery***

The FY2015 Gas Expansion Pilot Program was approved by the Rhode Island Public Utilities Commission as part of the FY2015 Gas ISR at the Open Hearing on March 27, 2014.

##### ***2.7.1 Customer Impact***

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$.630M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.



**Short Form Sanction Paper**

**3 Related Projects, Scoring, Budgets**

**3.1 Summary of Projects**

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
C054484		RI ISR Pilot Residential	2.412
C054487		RI ISR Pilot Commercial	0.603
<b>Total</b>			<b>3.015</b>

**3.2 Associated Projects**

Project Number	Project Title	Estimate Amount (\$M)
CRTC304	Base Growth - Meter Purchase/Operations	1.047
CRCC111	Gas System Reinforcement	3.737
<b>Total</b>		<b>4.784</b>

**3.3 Prior Sanctioning History**

N/A

**3.4 Category**

Category	Reference to Mandate, Policy, or NPV Assumptions
<input type="radio"/> Mandatory <input checked="" type="radio"/> Policy- Driven <input type="radio"/> Justified NPV	The FY2015 Gas Expansion Pilot was reviewed and approved by the RI DPUC and the RI PUC.



**Short Form Sanction Paper**

**3.5 Asset Management Risk Score**

Asset Management Risk Score:   49  

**Primary Risk Score Driver: (Policy Driven Projects Only)**

Reliability       Environment       Health & Safety       Not Policy Driven

**3.6 Complexity Level**

High Complexity       Medium Complexity       Low Complexity       N/A

Complexity Score:   N/A  

**4 Financial**

**4.1 Business Plan**

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY2015 Gas Budget	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000M

**4.1.1 If cost > approved Business Plan how will this be funded?**

The over run will be covered by the anticipated CIAC that was not included in the FY15 budget.

**4.2 CIAC / Reimbursement**

\$M	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
		2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	
CIAC/Reimbursement	0.000	0.015	0.000	0.000	0.000	0.000	0.000	0.015



**Short Form Sanction Paper**

**4.3 Cost Summary Table**

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total	
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+		
					2014/15	2015/16	2016/17	2017/18	2018/19	2019/20		
C054484	RI ISR Pilot Residential	Est Lvl (e.g. +/- 10%)	CapEx	-	2.412	-	-	-	-	-	-	2.412
			OpEx	-	-	-	-	-	-	-	-	-
			Removal	-	-	-	-	-	-	-	-	-
			Total	-	2.412	-	-	-	-	-	-	-
C054487	RI ISR Pilot Commercial	Est Lvl (e.g. +/- 10%)	CapEx	-	0.603	-	-	-	-	-	-	0.603
			OpEx	-	-	-	-	-	-	-	-	-
			Removal	-	-	-	-	-	-	-	-	-
			Total	-	0.603	-	-	-	-	-	-	-
Total Project Sanction			CapEx	-	3.015	-	-	-	-	-	-	3.015
			OpEx	-	-	-	-	-	-	-	-	-
			Removal	-	-	-	-	-	-	-	-	-
			Total	-	3.015	-	-	-	-	-	-	-

**4.4 Project Budget Summary Table**

**Project Costs per Business Plan**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+	
		2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	
CapEx	0.000	3.015	0.000	0.000	0.000	0.000	0.000	3.015
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	3.015	0.000	0.000	0.000	0.000	0.000	3.015

**Variance (Business Plan-Project Estimate)**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+	
		2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

**5 Key Milestones**

Milestone	Target Date: (Month/Year)
Sanction Paper Approval	4/2014
Begin Work	4/2014
Complete Work	3/2015
Close-out	6/2015



**Short Form Sanction Paper**

**6 Statements of Support**

**6.1.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

<b>Role</b>	<b>Individual</b>	<b>Responsibilities</b>
<i>Sponsor/ Asset Manager/ Asset Owner/ Process Owner</i>	Sean Mongan	Endorses implementation of sales and marketing
<i>Investment Planning</i>	Pat Pensabene	Endorses relative to 5-year business plan or emergent work
Resource Planning	Artie Georgacopoulos	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Customer	Jackson Lehr	Endorses the project aligns with gas growth strategy
Network Strategy, Gas	Walter Fromm	Endorses Program as it is included in FY2015 RI Gas ISR
Customer & Community Affairs	John Isberg	Endorses the project aligns with jurisdictional objectives

**6.1.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

<b>Function</b>	<b>Individual</b>	<b>Area</b>
Finance	Fowler, Keith	All
Regulatory	Zschokke, Peter	All
Jurisdictional Delegate	Fromm, Walter	Gas - NE
Procurement	Curran, Art	All
Control Center	Amerige, Thomas	All



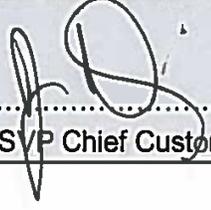
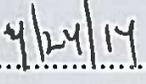
**Short Form Sanction Paper**

**7 Decisions**

I:

(a) APPROVE this paper and the investment of \$3.015M and a tolerance of +/-10%

(b) NOTE that Jackson Lehr is the Project Manager and has the approved financial delegation.

Signature..........Date..........

James Madej – SVP Chief Customer Officer



***Short Form Sanction Paper***

**8 Other Appendices**

N/A

**8.1 *Sanction Request Breakdown by Project***

N/A

**USSC Closure Paper**



<b>Title:</b>	FY2015 Gas Expansion Pilot Program- Rhode Island	<b>Sanction Paper #:</b>	USSC-14-160C
<b>Project #:</b>	C054484, C054487	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	3/30/17
<b>Author:</b>	Walter Fromm & Jackson Lehr	<b>Sponsor:</b>	Sean Mongan -VP Process & Performance
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Jackson Lehr

**1 Executive Summary**

This paper is presented to close C054484, C054487. The total spend was \$2.864M. The sanctioned amount for this project was \$3.015M.

*The final spend amount is \$2.864M broken down into:*

*\$2.852M Capex*

*\$0.000M Opex*

*\$0.012M Removal*

*With a CIAC/Reimbursement of \$.018M*

**2 Project Summary**

This program involved the installation of new main to serve new customers as part of the FY2015 Gas Expansion Pilot Program. It was anticipated that the proposed \$3.000M will fund the installation of roughly 20,000 feet of new gas main to provide access to gas for approximately 400 potential customers, of which approximately 100 will initially take service. It is important to note that this was a pilot program testing a new approach to gas expansion, aligned with the strategic build-out approach. Results could vary significantly depending on a number of factors including customer participation and the actual combination of projects pursued.



**USSC Closure Paper**

**3 Over / Under Expenditure Analysis**

**3.1 Summary Table**

Actual Spending (\$M)			
Project #	Description		Total Spend
C054484	FY2015 Rhode Island Gas Expansion Pilot Program	Capex	2.852
		Opex	0.000
		Removal	0.012
		<b>Total</b>	<b>2.864</b>
Project #	Description		Total Spend
C054487	FY2015 Rhode Island Gas Expansion Pilot Program	Capex	0.000
		Opex	0.000
		Removal	0.000
		<b>Total</b>	<b>0.000</b>
<b>Total</b>		Capex	2.852
		Opex	0.000
		Removal	0.012
		<b>Total</b>	<b>2.864</b>

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	3.015
		Opex	0.000
		Removal	0.000
		<b>Total Cost</b>	<b>3.015</b>
Sanction Variance (\$M)			Total Spend
		Capex	0.163
		Opex	0.000
		Removal	(0.012)
		<b>Total Variance</b>	<b>0.151</b>

**3.2 Analysis**

The FY2015 Rhode Island Gas Expansion Pilot Program Specific is 5% under plan which is within the tolerance level.



**USSC Closure Paper**

**4 Improvements / Lessons Learned/Root Cause**

- Work with Finance and Resource Planning to create better financial metrics.

**5 Closeout Activities**

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

(1) All work orders and funding projects have been closed

Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:

- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed .
- construction may cross multiple fiscal years
- the work order closing process is within the late charge waiting period
- other accounting processes or final system closing activities have not yet completed

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.



**USSC Closure Paper**

(2) All as-builts have been completed  
Program/Blanket projects may contain work orders for which no as-builts have yet been recorded for reasons including but not limited to:

- design and/or construction have not yet completed
- construction may cross multiple fiscal years
- work has completed recently and as-builts have not yet been processed into the system
- does not apply. Work order(s) are not linked to work management systems. (example: Meter Purchases, Meter Changes, AMR Installations Purchase Misc Capital Tools/Equipment, etc.)
- does not apply to Information systems projects.

(3) All lessons learned have been entered appropriately into the lesson learned database

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

**6 Statements of Support**

**6.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibilities
Investment Planner	Pensabene, Patrick M.	Endorses relative to 5-year business plan or emergent work
Resource Planning	Falls, Jonathon	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Fortier, Joseph Jr.	Endorses Resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Endorses Cost Estimate



**USSC Closure Paper**

**6.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

<b>Function</b>	<b>Individual</b>
Finance	Easterly, Patricia
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul



**USSC Closure Paper**

**7 Decisions**

I approve this paper.

Signature *Ross W. Turrini*

Date April 27, 2017

Executive Sponsor – Ross Turrini, Senior Vice President, Gas Process & Engineering  
and Chief Gas Engineer



**Short Form Sanction Paper**

<b>Title:</b>	FY16 System Reinforcement - RI	<b>Sanction Paper #:</b>	USSC-15-026
<b>Project #:</b>	CRCC111	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	March 3, 2015
<b>Author:</b>	Adnan Malik	<b>Sponsor:</b>	Timothy F. Small – Vice President, Gas Asset Management
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Thomas Finneral

**1 Executive Summary**

**1.1 Sanctioning Summary**

This paper requests sanction of CRCC111 in the amount \$5.576M with a tolerance of +/- 10% for the purposes of full implementation.

*This sanction amount is \$5.576M broken down into:*

- \$5.345M Capex*
- \$0.000M Opex*
- \$0.231M Removal*

**1.2 Project Summary**

Rhode Island system growth is forecasted to experience a peak-day customer growth of 14,016 Dth over the next five (5) years, corresponding to an average annual growth rate of 0.71%. Compounded by a first-year growth of 5.2% from the 2013 forecast, similar to last year's large growth, deficiencies in the current infrastructure will require system reinforcements to be constructed. For this year, new main will be used to connect areas of systems with strong pressures to those with weaker pressures, relay of small diameter mains with larger diameter mains, and a new district regulator station will be added in order to address a potential of over 10,600 customers impacted if design conditions (i.e., average temperature of -3° F) were experienced during the 2015/16 heating season based on current sendout forecast. Construction of the proposed projects in this program will ensure continuous and reliable service to these customers.

**2 Project Detail**

**2.1 Background**

Each year, Long Term Planning performs an analysis on the U.S. gas distribution network to determine any reinforcement projects, and associated costs, that need to be constructed over the following five (5) years in order to support forecasted customer growth. Reinforcement projects are designed to maintain minimum pressures



### **Short Form Sanction Paper**

throughout the distribution system under peak-hour conditions and are generally constructed as they become necessary (i.e., "just in time" reinforcement philosophy). These projects ensure that continuous service is maintained to all customers on the gas distribution network throughout the year in compliance with Federal and State Codes.

Examples of distribution system reinforcement projects include, but are not limited to, the following:

- Replacing existing undersized mains with larger diameter mains. "Leak-prone" pipe is targeted whenever practical.
- Looping or connecting system endpoints by installing new main.
- System operating pressure upratings (e.g. 45 psig to 60 psig).
- Installing new district regulators as well as replacing and/or rebuilding existing undersized district regulators.
- Transferring existing customers supplied from low-pressure mains to adjacent high-pressure mains (i.e., load shedding).

The results of the analysis are memorialized in the US Gas Distribution 5-Year Reinforcement and Reliability Plan. The Plan is issued annually so that it can be adjusted for changes to the Gas Supply send-out forecast, differences between actual and estimated load growth, reinforcement project deferrals, public works activity, main replacement program activity, Sales and Program Operations supported growth reinforcements, and updates/improvements to the SynerGEE computer network analysis models. The plan described herein is year one (1) of the 5 year plan covering fiscal year 2016.

It should be noted that the SynerGEE computer models used for the hydraulic analysis of the distribution network are validated on an annual basis. Field data from one of the coldest days of the year along with the highest distribution send-out is collected from across the network. The computer model is configured to match the system load experienced on that day and then calculated pressures are compared with field charts and SCADA data. Discrepancies are investigated to determine where the model might require updating and/or where field investigation is warranted. Conditions such as broken valves and mains filled with debris identified through the investigation process are remediated. For the 2013-14 verification analysis, there was great correlation on the Rhode Island gas system between model predicted pressures and actual recorded pressures with 95% of the verification points within acceptable tolerance. This shows that the model is reasonably accurate in predicting future problem areas. Also, this verification process helps identify potential new pressure monitoring locations in areas indicated by the model which could see pressure problems. These are areas which currently don't have pressure monitoring equipment. This helps in the future to ensure that predicted pressure problems are field verified before reinforcements are installed. Further details and results of the analysis are contained in the US Enterprise Wide 2013-14 Winter Performance Report.



**Short Form Sanction Paper**

Additionally, Long Term Planning uses a more in-depth analysis of customer growth to the zone/zip code level based on zone growth factors (percentages) provided by the Forecasting and Analytics group. This is allocated to the forecasted customer growth on the validated SynerGEE computer models. The result of this methodology is that some cities/town/zones show positive growth while others may show negative growth. By better simulating where the customer growth is expected to occur, the overall accuracy of the reinforcement projects that must be constructed in order to support each region’s average annual system growth are identified. These projects are designed to maintain minimum system design pressures during periods of peak demand, (i.e. design weather conditions), thus ensuring continuous service to all customers on the network in compliance with Federal and State Codes. The peak demand for a given territory is based on the same corporate forecast that is filed annually with the state utility commission and used to develop the gas supply portfolio. The System Reinforcement program is a critical component for enabling that gas supply to be delivered to the firm customer. Design weather conditions have been established for Rhode Island as -3°F (68 HDD).

**2.2 Drivers**

The 5-year gas send-out forecast for Rhode Island is as follows:

GAS SENDOUT (DT/DAY)						
Current Yr 14/15	Yr 1 15/16	Yr 2 16/17	Yr 3 17/18	Yr 4 18/19	Yr 5 19/20	Total Growth
395,770	397,116	400,021	405,824	407,933	409,786	14,016

The goal of the program is to maintain continuous service to all customers on the Rhode Island gas distribution network during periods of peak demand (i.e., design weather conditions). The results of the analysis (described above) performed on the gas distribution network for the 2015/16 winter using the current gas supply send-out forecast predicts that approximately 10,649 customers could experience pressures below minimum design and could be at risk of losing service if design conditions were to be experienced and the growth prediction is accurate. The estimated restoration cost (i.e., relight, plus claims) for this number of customers is \$10.65M, based on \$1,000/customer (See Appendix 2 for a discussion of the \$1,000/customer basis). This exceeds the cost of reinforcing the gas system to prevent this loss by approximately 90%. The projects contained in this reinforcement program have been designed to address these issues. These projects are designed for aggregate growth of all new customers; they are not for any specific customer.

**2.3 Project Description**

The reinforcement program includes the design, procurement, construction, testing, and completion of capital projects. The program contains various types of projects designed to cost-effectively reinforce areas of the gas distribution network that are predicted to experience pressures below minimum design levels due to forecasted



### **Short Form Sanction Paper**

growth. A full list of the Gas Planning Reinforcement Program projects for RI is in Appendix 1. The projects, totaling \$5.576M, are organized by the following work types:

- **New Main – Seven (7) Projects \$1.61M**  
In most cases, new main projects are designed to bring pressures on systems above minimum design levels by connecting areas of systems with strong pressure to areas with weaker pressure. This method of reinforcement often involves installing main in streets without gas, which provides opportunities to connect new customers. A total of 8,170 LF (1.5 miles) of new main will be installed under these projects.
- **Regulator Capacity Improvements – Two (2) Projects \$0.06M**  
Regulator Capacity improvements are designed to bring pressures on systems above minimum design levels by replacing existing undersized regulators. These stations are unable to maintain their desired outlet set point pressure during periods of peak usage and require larger sized regulators or regulators with lower differential requirements in order to meet the system demands. All work done at existing regulator stations is used as an opportunity to address any other outstanding issues that may exist at that station. The Pressure Regulating Engineering Team coordinates a review of these stations to ensure any concerns regarding the long term requirements of the station are addressed during construction. A total of 3 regulators will be exchanged as part of this program.
- **Regulator Stations – One (1) Project \$0.40M**  
A new regulator station may be optimally designed and located to assist in achieving pressure support of lower pressure systems, raising systems above minimum design levels. These stations are strategically placed based on minimizing new main and interconnecting two separately pressure systems without causing strain on the upstream system. This project will add a new 99 psig to 35 psig regulator station in North Kingstown.
- **System Upratings & Deratings – Two (2) Projects \$0.43M**  
System uprating and deratings may act as load shedding projects, bringing lower pressure system support or reducing strain on higher pressure systems. By transferring customers from one system to another may benefit a system to rise above minimum design levels. One project reduces droop on a 60 psig regulator by lowering the outlet pressure to 35 psig, while another uprates segments to 10 psig, reducing the load off the LP.
- **Relay Main – Ten (10) Projects \$2.99M**  
Relay main projects are designed to bring pressures on systems above minimum design levels by replacing small diameter mains, which often cause bottlenecks in the system, with larger diameter mains. Whenever practicable, “leak-prone” pipe is targeted for replacement. A total of 14,715 LF (2.8 miles) of new plastic main will be installed under these projects. In addition, 84% of the main being replaced is “leak-prone” pipe.
- **Engineering Costs for Fiscal Year 2017 Projects Placeholder - \$0.09M**



## **Short Form Sanction Paper**

These costs are for engineering and design of complex projects identified for FY17 construction. The Level 1 estimate was determined by Project Engineering and based on historical data.

### **2.4 Benefits**

Reinforcement projects that ensure continuous and reliable service to customers in a cost efficient manner are identified and proposed for construction. Prospective projects are evaluated for additional system benefits and synergies with other proposed capital projects and often have the added benefit of increasing overall system reliability and improving operability of the network. In addition, many of these projects create the opportunity to be combined with public works activities or replace/abandon aging infrastructure (e.g., "leak-prone" pipe) whenever applicable, providing a benefit to the integrity program.

Approximately 10,649 customers may experience pressures below minimum design and be at risk of losing service if design conditions were to be experienced during the 2015/16 heating season and the growth forecast is accurate. The construction of the Rhode Island reinforcement program will eliminate this possibility.

Also, current conditions on the Rhode Island gas distribution system require contingency operations in order to manage the system during periods of peak demand. These operations involve the manual adjusting of nine (9) LP district regulator set-points above the standard 10 inches water column setting and four (4) HP district regulator set-point to MAOP. The construction of the Rhode Island reinforcement program will assist in eliminating this need.

Additionally, the program will install approximately 24,345 LF of main and facilitate the abandonment of approximately 12,651 LF of existing "leak-prone" pipe on the system. This represents a replacement rate of 52% for this program.

### **2.5 Business & Customer Issues**

There are no significant business issues beyond what has been described elsewhere.

### **2.6 Alternatives**

#### **Alternative 1: Do Nothing/Deferral**

This option could result in potentially 10,649 customers experiencing pressures below minimum design levels and being at risk of losing service if design conditions were to be experienced during the 2015/16 heating season term under the current Gas Supply sendout forecast. The estimated restoration cost (i.e., relight, plus claims) for this number of customers is \$10.6M, based on \$1,000/customer. In addition, restrictions on sales activities would be required in constrained areas and the Company could find itself in violation of its tariff in jurisdictions with an obligation to serve.

### **2.7 Investment Recovery**

Investment recovery will be through standard rate recovery mechanisms.



**Short Form Sanction Paper**

**2.7.1 Customer Impact**

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$1.122M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

**3 Related Projects, Scoring, Budgets**

**3.1 Summary of Projects**

Project Number	Project Title	Estimate Amount (\$M)
CRCC111	Growth Reinforce-Proactive-RI	5.576
<b>Total</b>		<b>5.576</b>

**3.2 Associated Projects**

N/A

**3.3 Prior Sanctioning History**

NA

**3.4 Category**

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory	Federal Code 49 CFR 192.623 requires minimum pressures to be maintained in the gas system. National Grid has established system minimum pressures to be maintained for all pressure levels.
<input checked="" type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	
<input type="radio"/> Other	

**3.5 Asset Management Risk Score**

Asset Management Risk Score:   37  

**Primary Risk Score Driver:** (Policy Driven Projects Only)

- Reliability     
 Environment     
 Health & Safety     
 Not Policy Driven



**Short Form Sanction Paper**

**3.6 Complexity Level**

High Complexity     Medium Complexity     Low Complexity     N/A

Complexity Score:   15  

**3.7 Next Planned Sanction Review**

Date (Month/Year)	Purpose of Sanction Review
July 2016	Project Closure

**4 Financial**

**4.1 Business Plan**

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY16-FY20 Gas Budget File	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	0.000

**4.1.1 If cost > approved Business Plan how will this be funded?**

NA

**4.2 CIAC / Reimbursement**

\$M	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

**4.3 Cost Summary Table**

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total		
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +			
CRCC111	Growth Reinforce-Proactive-RI	+/- 10%	CapEx	-	5.345	-	-	-	-	-	-	5.345	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	0.231	-	-	-	-	-	-	-	0.231
			Total	-	5.576	-	-	-	-	-	-	-	5.576

**4.4 Project Budget Summary Table**

**Project Costs per Business Plan**



**Short Form Sanction Paper**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2015/16	Yr. 2 2016/17	Yr. 3 2017/18	Yr. 4 2018/19	Yr. 5 2019/20	Yr. 6 + 2020/21	
CapEx	0.000	5.345	0.000	0.000	0.000	0.000	0.000	5.345
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.231	0.000	0.000	0.000	0.000	0.000	0.231
<b>Total Cost in Bus. Plan</b>	<b>0.000</b>	<b>5.576</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>5.576</b>

**Variance (Business Plan-Project Estimate)**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2015/16	Yr. 2 2016/17	Yr. 3 2017/18	Yr. 4 2018/19	Yr. 5 2019/20	Yr. 6 + 2020/21	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total Cost in Bus. Plan</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

**5 Key Milestones**

Milestone	Target Date: (Month/Year)
Sanctioning Approval	03/2015
Begin Construction	04/2015
Projects in Service	11/2015
Construction Complete	03/2016
Project Closeout	07/2016

**6 Statements of Support**

**6.1.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

Role	Individual	Responsibilities
<i>Investment Planner</i>	Pensabene, Patrick	Endorses relative to 5-year business plan or emergent work.
<i>Resource Planning</i>	Georgacopoulos, Artie	Endorses resources, cost estimate, schedule, and portfolio alignment.
<i>Project Management</i>	Moore, Timothy	Endorses resources, cost estimate, and schedule.



**Short Form Sanction Paper**

**6.1.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

<b>Reviewer List</b>	<b>Individual</b>
<i>Finance</i>	Fowler, Keith
<i>Finance</i>	Horowitz, Phillip
<i>Regulatory</i>	Zschokke, Peter
<i>Jurisdictional Delegates</i>	Iseler, David G.
<i>Procurement</i>	Curran, Art
<i>Control Center</i>	Eagan, Mark J.

**6.1.3 List References**

1	US Enterprise Wide 5-Year Distribution System Reinforcement & Reliability Plan
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**Short Form Sanction Paper**

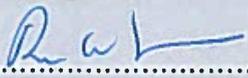


**7 Decisions**

I:

(a) APPROVE this paper and the investment of \$5.576M and a tolerance of +/- 10%

(b) NOTE that Thomas Finneral is the Project Manager and has the approved financial delegation.

Signature.....  .....Date 3/9/2015

Executive Sponsor – Ross Turrini, Interim Senior Vice President Network Strategy



**Short Form Sanction Paper**

**8 Other Appendices**

**8.1 Sanction Request Breakdown by Project**

**Appendix 1 – FY16 Rhode Island Reinforcement Projects**

Work Type	Town	Project Description	Length	Size	Material	MAOP	Estimate Level	Reason for Project
New Main	Cranston	Install 50 ft of 12-in PE LP main on 2nd Ave across Elmwood Ave.	50	12"	PL	LP	1	Project is necessary to maintain adequate minimum system pressures during periods of peak demand
New Main	Cranston	Install 65 ft of 6-in PE LP main on Vallette St across E View Ave.	65	6"	PL	LP	1	Project is necessary to maintain adequate minimum system pressures during periods of peak demand
New Main	Cranston	Install 515 ft of 8-in PE LP from 6-in CS on Eden Park Dr to 6-in CI on Oakland Ave and 245 ft of 6-in PE LP on Glen Grove Ave from Waterman Ave to Oakland Ave	760	6"	PL	LP	1	Project is necessary to maintain adequate minimum system pressures during periods of peak demand
Relay Main	Cranston	Relay of 1,250 ft of 4-in CI, PE with 6-in PE LP main on Fort Ave from Ocean Ave to SeaView Ave (27 svcs).	1,250	6"	PL	LP	1	Project is necessary to maintain adequate minimum system pressures during periods of peak demand
Relay Main	Cranston	Relay of 320 ft of 6-in CI LP on Maple St from Duckworth to Park, 200 ft of 6-in BS LP on Duckworth St from Maple to Oak, and 170 ft of 6-in BS LP on Park Ave from Old Park to Maple with 12-in PE LP main (7 svcs).	690	12"	PL	LP	1	Project is necessary to maintain adequate minimum system pressures during periods of peak demand
New Main	East Providence	Install of 1,150 ft of 8-in PE 99 psig parallel main on Wampanoag Trail from existing 8-in CS 99 psig at #400 to the N/S road crossing.	1,150	6"	PL	99	1	Project is necessary to maintain adequate minimum system pressures during periods of peak demand
Regulator Capacity	Johnston	Replace 2 2-in Grove 900-TE with 2-in 1098 & Flowmax at Station RIS-057 (Atwood at Plainfield)		2"		LP	1	Project is necessary to maintain adequate minimum system pressures during periods of peak demand
System Updatings and Deratings	Lincoln	Derate Cobble Hill Station from 99# to 35#. Disconnect of S. Cumberland 60 psig main on Mineral Spring Ave at Charles St. Down-rating of Regulator Station C043 @ Cobble Hill to 35 psig. Installation of 200 ft of 4-in PL 35 psig main at Nipmuc Trail and Woodward. Installation of 600 ft of 4-in PL 35 psig main at Nipmuc Trail and Angell. Installation of 10 ft of 4-in PL 35 psig main at Angell and Benjamin.	810	4"	PL	35	0	Project minimizes regulator drooping at Station and adds reliability to 35# system.
Relay Main	Narragansett	Relay of 1,780 ft of 2-in CS 35 psig main with 6-in PL 35 psig main on Wampum Rd from Saybrooke Ave to Boston Neck Rd, 650 ft of new 6-in PE 35 psig in Boston Neck Rd from #1001 Boston Neck Rd to Conarcticus Rd, & Relay 18 Services	2,430	6"	PL	35	1	Project is necessary to maintain adequate minimum system pressures during periods of peak demand
System Updatings and Deratings	Newport	Cliff Ave LP Upgrade to 10 psig. Relay of 260 ft of 4-in CI LP main with 4-in PL 10 psig on Beach Ave from #5 to Cliff. Disconnect of Newport LP at Armandale and Merton. Armandale and Dresser. Installation of 150 ft of 4-in PE 10 psig main across Memorial Blvd to Cliff. Upgrading segment to 10 psig. Total of 5,135 ft, 81 services	410	4"	PL	LP, 10	0	Project is necessary to maintain adequate minimum system pressures during periods of peak demand
Regulator Stations	North Kingstown	Installation of a new 99 psig to 35 psig Regulator Station at Devil's Foot Rd and Namcook Rd with 240 ft of 12-in PE 35 psig main on Devil's Foot Rd from Namcook Rd to Post Rd.	240	12"	PL	99, 35	1	Project is necessary to maintain adequate minimum system pressures during periods of peak demand
Relay Main	North Providence	Relay of 1,000 ft of 8-in CI LP on Charles St from Mineral Spring to May St with 12-in PE LP main (12 svcs).	1,000	12"	PL	LP	1	Project is necessary to maintain adequate minimum system pressures during periods of peak demand
Relay Main	North Providence	Relay of 1,505 ft of 4-in, 6-in CI LP on Adams St from Mineral Spring Ave to Gillen Ave with 12-in PE LP main (25 svcs).	1,505	12"	PL	LP	1	Project is necessary to maintain adequate minimum system pressures during periods of peak demand
Relay Main	North Providence	Relay of 450 ft of 2-in BS, 4-in CI LP on Superior View Blvd from Fruit Hill Ave to Lookout Ave with 815 ft of 6-in PE LP (5 svcs).	815	6"	PL	LP	1	Project is necessary to maintain adequate minimum system pressures during periods of peak demand
Relay Main	South Kingstown	Relay of 3,985 ft of 8-in CS 35 psig main with 12-in PE 35 psig main in Kingstown Rd from Linden St to Saugutucket Rd (13 svcs).	3,985	12"	PL	35	1	Project is necessary to maintain adequate minimum system pressures during periods of peak demand
Engineering	Various	Engineering costs associated with 2016 projects					1	Engineering for 2016 projects
New Main	Warren	Install 2,800 ft of 12-in PE 60 psig main on Main St from Brown St to Wheaton St.	2,800	12"	PL	60	1	Project is necessary to maintain adequate minimum system pressures during periods of peak demand
New Main	Warwick	Install 2,475 ft of 6-in PE 35 psig main on Cowsett Rd from Blue Ridge Rd to Hardig Rd	2,475	6"	PL	35	1	Project is necessary to maintain adequate minimum system pressures during periods of peak demand
Relay Main	Warwick	Relay 1,200 ft of 6-in BS, PE 35 psig main on W Shore Rd from Warwick Ave to Frontier Rd with 6-in PE 35 psig main (7 svcs).	1,375	6"	PL	35	1	Project is necessary to maintain adequate minimum system pressures during periods of peak demand
Regulator Capacity	Warwick	Replace 2-in Grove 900-TE with 2-in 1098/Flowmax at Station RIS-035 (N Country Club and Spring Green)		2"			1	Project is necessary to maintain adequate minimum system pressures during periods of peak demand
New Main	Westerly	Install 850 ft of 6-in PE LP from outlet of Station 00E along Beach St and East Ave.	850	6"	PL	LP	1	Project is necessary to maintain adequate minimum system pressures during periods of peak demand
Relay Main	Woonsocket	Relay of 515 ft of 4-in BS, CI LP on N Main St from E School St to Phoebe St with 6-in PE LP main (11 svcs).	515	6"	PL	LP	1	Project is necessary to maintain adequate minimum system pressures during periods of peak demand
Relay Main	Woonsocket	Relay of 475 ft of 4-in CI LP main with 6-in PE LP main in Ballou St from Bailey St to Providence St, 635 ft of 4-in CI LP main with 6-in PE LP main in Providence St from Ballou St to Ave C, & transfer 25 LP services to 60 psig main on Providence St & Ballou St.	1,150	6"	PL	LP	1	Project is necessary to maintain adequate minimum system pressures during periods of peak demand



## **Short Form Sanction Paper**

### **Appendix 2 – Outage Restoration Costs**

Estimates for relighting customers and recovering from a system outage have been prepared to quantify the impact of outages related to insufficient system capacity during periods of peak demand and severe winter cold.

Actual relight costs have been captured from recent incidents to quantify company expenses related to restoring service. These were all related to outages that occurred for reasons other than insufficient system capacity and operations were conducted under benign weather conditions. It is likely that during severe winter weather, costs would increase.

Claims related to frozen buildings, burst pipes and equipment damage due to a lack of heat during severe cold weather were captured from the only incident in recent times the company experienced – e.g. the outage in Hull, Ma during the peak day of January 16th, 2004.

#### **Relight Costs**

Tiverton (2008): 900 customer outage with relight costs of \$322,839 for an average relight cost of \$358.71 per customer.

Cutchoque (2003): 1,800 customer outage with relight costs of \$2,367,401 with an average relight cost of \$1,315.22

Glen Cove (2008): 1,016 customer outage with relight costs of \$275,000 for an average relight cost of \$270.67 per customer

Westerly, RI (2011): 1,686 customer outage with relight costs of \$2,811,455 for an average relight cost of \$1,667.53 per customer

Average cost to relight for combined instances above equals \$1069 per customer

#### **Claims**

Hull (2004): 297 customers affected with claims totaling \$206,336 for an average claim of \$694.73 per customer

#### **Combined cost of relight and claims**

The combined cost of relighting customers and resolving claims averages out to \$1,764 per customer.

Recognizing the amount of variability in different incidents such as weather conditions, different types of neighborhoods, variable labor costs, economies of scale, etc., for purposes of evaluating the benefits of reinforcement projects, an average value of service restoration costs and claims of \$1,000 per customer is used.



**USSC Closure Paper**

<b>Title:</b>	FY16 System Reinforcement - RI	<b>Sanction Paper #:</b>	USSC-15-026C
<b>Project #:</b>	CRCC111	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	11/22/2017
<b>Author:</b>	A. Malik	<b>Sponsor:</b>	J. Stavrakas – VP Gas Asset Management
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	W. Mycroft

**1 Executive Summary**

This paper is presented to close CRCC111. The total spend was \$6.779M. The latest sanctioned amount for this project was \$5.576M.

*The final spend amount is \$6.779M broken down into:*

- \$5.935M Capex*
- \$0.000M Opex*
- \$0.844M Removal*

**2 Project Summary**

This is the annual sanction closure of the Gas System Reinforcement Program for Rhode Island. Under this program, projects are completed to address deficiencies in the existing infrastructure in order to address a potential of over 10,600 customers impacted if design conditions are realized (i.e. average daily temperature of -3° F). Overall the program was successful and no distribution system pressure issues were experienced over the winter of 2015-16.



**USSC Closure Paper**

**3 Over / Under Expenditure Analysis**

**3.1 Summary Table**

Actual Spending (\$M)			
Project #	Description		Total Spend
CRCC111	FY16 System Reinforcement - RI	Capex	5.935
		Opex	(0.000)
		Removal	0.844
		<b>Total</b>	<b>6.779</b>
<b>Total</b>		Capex	5.935
		Opex	(0.000)
		Removal	0.844
		<b>Total</b>	<b>6.779</b>

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	5.345
		Opex	0.000
		Removal	0.231
		<b>Total Cost</b>	<b>5.576</b>
Sanction Variance (\$M)			Total Spend
		Capex	(0.590)
		Opex	0.000
		Removal	(0.613)
		<b>Total Variance</b>	<b>(1.203)</b>

**3.2 Analysis**

The total program came in approximately 22% above the sanction approval estimate. The major driver of the total cost variance is due to not properly accounting for carry-over costs from FY15 projects in the FY16 program. Nearly \$1.0M in FY15 projects' restoration costs were not initially included in the FY16 program. In addition, the completed projects were being constructed at higher costs than originally estimated. A total of 12 of the 22 projects in the original program sanctioning were constructed in FY16. Three projects were cancelled from the program due to construction feasibility, and four projects were walkined in and completed. An additional five projects were deferred in order to prevent further costs above sanctioned amount in the program. The remaining two projects were partially constructed and carried-over into FY17.

**4 Improvements / Lessons Learned**

Current and future programs now include anticipated carry-over estimates on a project level basis, regardless of whether the costs are to complete construction and/or restoration. Updates to the Rhode Island standard estimation tool with planned annual



**USSC Closure Paper**

updates based on current expenditures lead to better project estimates. Monthly actuals costs reporting have ensured proper budget tracking throughout the fiscal year. Bi-Weekly meetings are now conducted by Resource Planning to ensure focus on these projects, establish project schedules and milestones, identify and mitigate risks timely, and enable reporting accuracy on progress of projects and the overall program.

**5 Closeout Activities**

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) All work orders and funding projects have been closed  
Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:
- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed .
  - construction may cross multiple fiscal years
  - the work order closing process is within the late charge waiting period
  - other accounting processes or final system closing activities have not yet completed

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

- (2) All as-builts have been completed



**USSC Closure Paper**

Program/Blanket projects may contain work orders for which no as-builts have yet been recorded for reasons including but not limited to:

- design and/or construction have not yet completed
- construction may cross multiple fiscal years
- work has completed recently and as-builts have not yet been processed into the system
- does not apply. Work order(s) are not linked to work management systems. (example: Meter Purchases, Meter Changes, AMR Installations Purchase Misc Capital Tools/Equipment, etc.)
- does not apply to Information systems projects.

(3) All lessons learned have been entered appropriately into the lesson learned database

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

**6 Statements of Support**

**6.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibilities
Investment Planner	Pensabene, Patrick	Endorses relative to 5-year business plan or emergent work.
Resource Planning	Vidal, Alfredo	Endorses resources, cost estimate, schedule, and portfolio alignment.
Project Management	Wheeler, Bradley	Endorses resources, cost estimate, and schedule.
Gas Project Estimation	Paul, Art	Endorses cost estimate

**6.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

Function	Individual
Finance	Easterly, Patricia
Regulatory	Zschokke, Peter
Jurisdictional Delegates	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul J.



**USSC Closure Paper**

**7 Decisions**

I approve this paper on March 30, 2017.

Signature *Ross W. Turrini* Date April 27, 2017  
Executive Sponsor – Ross Turrini, Senior Vice President, Gas Process & Engineering  
and Chief Gas Engineer

Funding Project Information	
Description	Proact Serv Replace Prog-RI
Company	5360-Narragansett Electric
Bus Segment	RIGASD
Budget	CRCC218
Department	78105360G - Gas Construc
Funding Proj	CRCC218
Last Approved Rev	6
Status	open
FP ID	326095544
F. P. Type	P_Gas Distribution Construction RI
Long Description	Proactive Service Replacement Program
Major Location	MASS PLANT - RI (Gas)
Asset Loc Det	
Notes	
Reason	
Approval Group	<none>
Est Start Date	4/1/2017
Late Charge Wait	0 Months
Est Complete	3/31/2018
In Service Date	
Est In Service	3/31/2018
Completion Date	
Est Annual Rev	
First CPR Month	
Initiated By	DIACOM
Close Date	
Date Suspended	
Date Initiated	11/8/2012

**Details**

Accounts

Contacts

Class Codes

Justification

Tax Status

Authorizations

User Comment

Review

Audits

Delete FP

Cancel FP

Suspend FP

Estimates

Update

Print

Close

Record 1 of 1

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Funding Project Information
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<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 2px;">Title</td> <td style="border: 1px solid gray; padding: 2px;">Proact Serv Replace Prog-RI</td> </tr> <tr> <td style="padding: 2px;">Funding Project</td> <td style="border: 1px solid gray; padding: 2px;">CRCC218</td> </tr> </table>	Title	Proact Serv Replace Prog-RI	Funding Project	CRCC218	<div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Details</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Accounts</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Contacts</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Class Codes</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Justification</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Tax Status</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Authorizations</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">User Comment</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Review</div>
Title	Proact Serv Replace Prog-RI				
Funding Project	CRCC218				

**Class Codes**

Budget Plant Class	Gas Distribution PAM
Send to SE	
<b>Miscellaneous Billing</b>	
Misc Billing Status	
<b>Required</b>	
Force Billing Flag	
RDV Allocation Eligible	
<b>Sanctioning Data</b>	
DDA Amount	
Lower Tolerance	.90
Strategy Type Name	
Upper Tolerance	1.10

Indicates Display Only - (d) ▾

	<div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Audits</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Delete FP</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Cancel FP</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Suspend FP</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Estimates</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Update</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Print</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Close</div>
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Record 1 of 1   
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Funding Project Information
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**New Approval Type**

**Funding Project**  **Revision**

**Approval Type**  **Amount**

**Status**  **Sent By**  **Date Sent**  **Date Appr**

	Approver	Required	Date Approved	Authority Limit
+ Approver 1 -----	<input type="text" value="Connolly, Christopher"/>	<input checked="" type="checkbox"/>	6/2/2015	\$1,000,000

**Budget Version**

Rev

Record  of 1



**Short Form Sanction Paper**

<b>Title:</b>	FY16 Cast Iron Joint Encapsulation Reactive Blanket – Rhode Island	<b>Sanction Paper #:</b>	USSC-15-222
<b>Project #:</b>	CRFN211, CRFS211	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	March 24, 2015
<b>Author:</b>	Fred Amaral	<b>Sponsor:</b>	Neil Proudman – VP Gas Operations, NE
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Fred Amaral

**1 Executive Summary**

**1.1 Sanctioning Summary**

This paper requests the sanction of CRFN211, CRFS211 in the amount of \$3.050M with a tolerance of +/- 10% for the purposes of full implementation.

*This sanction amount is \$3.050M broken down into:*

- \$2.976M Capex*
- \$0.000M Opex*
- \$0.074M Removal*

**1.2 Project Summary**

This proposed blanket investment is to provide approved funding for the repair of cast iron bell joints that are discovered randomly during the proactive leakage surveys or discovered following public odor calls.

**2 Project Detail**

**2.1 Background**

The proactive main and service replacement programs upgrade existing main piping and customer services as prioritized by risk based on pressure, material, vintage, location, and select other variables. The potential for leakage on joint connections on the remaining underground piping exists and requires a reactive response to correct the deficiency which is the focus of this request.



## **Short Form Sanction Paper**

### **2.2 Drivers**

The goal of this program is to reduce the risk associated with cast iron joint connections. The Drivers for this category are both Safety and Reliability.

### **2.3 Project Description**

Approval is being requested for the necessary funding to repair leaking cast iron joints.

### **2.4 Benefits**

The benefits of performing this work include:

- Elimination of the risk associated with these joints.
- Improved community and government relations
- Adherence to Regulatory compliance requirements

### **2.5 Business & Customer Issues**

There are no significant business issues beyond what has been described elsewhere.

### **2.6 Alternatives**

These work activities are random, emergency driven and mandated; therefore, there is not an alternative to completing the activities.

### **2.7 Investment Recovery**

Investment recovery will be through standard rate recovery mechanisms.

#### **2.7.1 Customer Impact**

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.625M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.



**Short Form Sanction Paper**

**3 Related Projects, Scoring, Budgets**

**3.1 Summary of Projects**

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRFN211	N/A	CI Joint Encapsulate (RI Hub Rule)	1.525
CRFN211	N/A	CI Joint Encapsulate (RI Hub Rule)	1.525

**3.2 Associated Projects**

N/A

**3.3 Prior Sanctioning History**

N/A

**3.4 Category**

Category	Reference to Mandate, Policy, or NPV Assumptions
<input checked="" type="radio"/> Mandatory	Mandatory work activities related to emergency response and regulatory compliance as stipulated in the National Grid Maintenance Plan, DOT192 and State Requirements.  There is also Policy-Driven work included in this sanctioning related to customer driven requests.
<input type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	



**Short Form Sanction Paper**

**3.5 Asset Management Risk Score**

Asset Management Risk Score: 40

**Primary Risk Score Driver:** (Policy Driven Projects Only)

- Reliability     
 Environment     
 Health & Safety     
 Not Policy Driven

**3.6 Complexity Level**

- High Complexity     
 Medium Complexity     
 Low Complexity     
 N/A

Complexity Score:   15  

**3.7 Next Planned Sanction Review**

Date (Month/Year)	Purpose of Sanction Review
June 2016	Sanction Paper Closeout

**4 Financial**

**4.1 Business Plan**

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY16 – FY20_Gas- Budget_File	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000M

**4.1.1 If cost > approved Business Plan how will this be funded?**

N/A



**Short Form Sanction Paper**

**4.2 CIAC / Reimbursement**

\$M	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
CIAC/Reimbursement-N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

**4.3 Cost Summary Table**

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total		
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +			
					2015/16	2016/17	2017/18	2018/19	2019/20	2020/21			
CRRN211, CRFS211	Cast Iron Joint Leak Repair	Est Lvl (e.g +/- 10%)	CapEx	-	2.976	-	-	-	-	-	-	2.976	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	0.074	-	-	-	-	-	-	-	0.074
			Total	-	3.050	-	-	-	-	-	-	-	3.050

**4.4 Project Budget Summary Table**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
CapEx	0.000	2.976	0.000	0.000	0.000	0.000	0.000	2.976
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.074	0.000	0.000	0.000	0.000	0.000	0.074
Total Cost in Bus. Plan	0.000	3.050	0.000	0.000	0.000	0.000	0.000	3.050

**Variance (Business Plan-Project Estimate)**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

**5 Key Milestones**

Milestone	Target Date: (Month/Year)
Sanction Paper Approval	March 2015
Begin Work	April 2015
Complete Work	March 2016
Sanction Paper Closure	June 2016



**Short Form Sanction Paper**

**6 Statements of Support**

**6.1.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

<b>Role</b>	<b>Individual</b>	<b>Responsibilities</b>
Investment Planner	Patrick Pensabene	Endorses relative to 5-year business plan or emergent work
Resource Planning	Artie Georgacopoulos	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Moore, Timothy	Endorses Resources, cost estimate schedule

**6.1.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

<b>Reviewer List</b>	<b>Individual</b>
Finance	Fowler, Keith, Philip Horowitz
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Iseler, David
Procurement	Curran, Art
Control Center	Eagan, Mark J.

**6.1.3 List References**

N/A

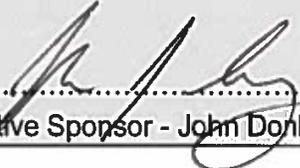


**Short Form Sanction Paper**

**7 Decisions**

I:

- (a) APPROVE this paper and the investment of \$3.050M and a tolerance of +/-10%
- (b) NOTE that Fred Amaral is the Project Manager and has the approved financial delegation.
- (c) NOTE: In the event that any Blanket/Program projects are not approved prior to the start of the FY2017 fiscal year, the FY2016 approval limits will remain in effect until such time as the FY2017 blanket/program projects are approved by USSC and/or other appropriate authority for approval.

Signature..........Date.....3-30-15.....

Executive Sponsor - John Donleavy, EVP and Chief Operating Officer



***Short Form Sanction Paper***

**8 Other Appendices**

N/A

**8.1 *Sanction Request Breakdown by Project***

N/A



**USSC Closure Paper**

<b>Title:</b>	FY16 CI Joint Encapsulation-Reactive Blanket-RI Closure	<b>Sanction Paper #:</b>	USSC-15-222C
<b>Project #:</b>	Various – See Appendix	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	11/29/2016
<b>Author:</b>	Kevin Browne	<b>Sponsor:</b>	Neil Proudman, VP Maintenance & Construction NE Gas
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Steve Lannon

**1 Executive Summary**

This paper is presented to close various funding projects – see Appendix. The total spend was \$3.661M. The sanctioned amount for this project was \$3.050M.

The final spend amount is \$3.661M broken down into:

- \$3.648M Capex*
- \$0.000M Opex*
- \$0.013M Removal*

**2 Project Summary**

This blanket investment is to provide funding for the repair of cast iron bell joints that are discovered randomly during the proactive leakage surveys or discovered following public odor calls.



**USSC Closure Paper**

**3 Over / Under Expenditure Analysis**

**3.1 Summary Table**

Actual Spending (\$M)			
Project #	Description		Total Spend
Various – See Appendix	FY16 CI Joint Encapsulation- Reactive Blanket-RI Closure	Capex	3.648
		Opex	0.000
		Removal	0.013
		<b>Total</b>	<b>3.661</b>
<b>Total</b>		Capex	3.648
		Opex	0.000
		Removal	0.013
		<b>Total</b>	<b>3.661</b>

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	3.000
		Opex	0.000
		Removal	0.050
		<b>Total Cost</b>	<b>3.050</b>
Sanction Variance (\$M)			Total Spend
		Capex	(0.648)
		Opex	0.000
		Removal	0.037
		<b>Total Variance</b>	<b>(0.611)</b>



**USSC Closure Paper**

**3.2 Analysis**

The amount of CI Joint Encapsulation work came in at about the volume that was planned for, but the charges for some of this work may have hit the Service Replacement – Reactive – Leaks category. This is based on comparing the sanctioned amount versus the actual spent in the Service Replacement – Reactive – Leaks category. This blanket should now be closed out.

**4 Improvements / Lessons Learned**

Unit costs are being updated by the Process and Performance group within the Project Management, Complex Construction, and Resource Planning. Improvements to track project costs have provided for better accuracy of year-end spending projections. The recently implemented Monthly Zero Variance and PCM meetings will help to ensure that sanctioned spending levels are not exceeded without executive approval.

**5 Closeout Activities**

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) All work orders and funding projects have been closed  
Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:
- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed.



**USSC Closure Paper**

- construction may cross multiple fiscal years
- the work order closing process is within the late charge waiting period
- other accounting processes or final system closing activities have not yet completed

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

(2) N/A

(3) All lessons learned have been entered appropriately into the lesson learned database

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

**6 Statements of Support**

**6.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibility
Investment Planner	Pensabene, Patrick M.	Endorses relative to 5-year business plan or emergent work
Resource Planning	Vidal, Alfredo	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Michel, Michael	Endorses Resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Endorses Cost Estimate

**6.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

Function	Individual
Finance	Easterly, Patricia
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul

**USSC Closure Paper**



**7 Decisions**

I approve this paper.

Signature *Ross W. Turrini*

Date April 27, 2017

Executive Sponsor – Ross Turrini, Senior Vice President, Gas Process & Engineering  
and Chief Gas Engineer

USSC Closure Paper



8 Appendix

Sanction Paper Number	Original Approved Amount	FP Proj No	FP Proj Descr	Capex	Opex	Removal	Total
USSC-15-222	\$ 3,050,000	C039267	CI JOINT ENCAPSULATION	(\$0,667)	\$0	\$1,337	(\$7,330)
		CON0030	LEAK REPAIR SCHEDULED/UNSCHEDULED	\$12,248		\$5,344	\$17,592
		CRCC102	NEW BUS - RES -RI	\$2,555	\$0	\$0	\$2,555
		CRFN211	CI JOINT ENCAPSULATE (RI HUB RULE)	\$21,507	\$0	\$0	\$21,507
		CRFN219	LEAK INVEST/REPAIR SERV & MAIN-RI	\$350,535	\$0	\$0	\$350,535
		CRFS210	REACT MAIN & SERV WORK NONLEAK-RI	\$8,024	\$0	\$0	\$8,024
		CRFS211	CI JOINT ENCAPSULATE (RI HUB RULE)	\$176,568	\$0	\$6,556	\$183,124
		CRFS219	LEAK INVEST/REPAIR SERV & MAIN-RI	\$3,085,507	\$0	\$0	\$3,085,507
<b>USSC-15-222 Sum</b>				<b>\$3,648,278</b>	<b>\$0</b>	<b>\$13,237</b>	<b>\$3,661,515</b>



**Short Form Sanction Paper**

<b>Title:</b>	FY 16 City/State Construction Blanket - Narragansett	<b>Sanction Paper #:</b>	USSC-15-066
<b>Project #:</b>	CRCC306, CRCC307, CRCC308, CRCC312	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	March 24, 2015
<b>Author:</b>	Thomas Mulkeen	<b>Sponsor:</b>	Neil Proudman, Vice President of Gas Operations New England
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Thomas Mulkeen

**1 Executive Summary**

**1.1 Sanctioning Summary**

This paper requests sanction of Project # CRCC306, CRCC307, CRCC308, CRCC312 in the amount of **\$5.920M** and with a tolerance of **+/- 10%** for the purpose of full implementation.

This sanction amount of \$5.920M for the FY 2015/2016 program can be broken down into:

\$5.562M Capex  
\$0.000M Opex  
\$0.358M Removal  
With a CIAC/Reimbursement of \$1.327M

**1.2 Project Summary**

The City/State Construction (CSC) blanket for the Narragansett Electric Company consists of work driven by numerous municipalities that National Grid serves, as well as, various third party private entities within Narragansett Electric Company.

**2 Project Detail**

**2.1 Background**

The City/State Construction (CSC) blanket for the Narragansett Electric Company consists of work driven by the Rhode Island Department of Transportation (RIDOT) and the numerous municipalities that National Grid serves, as well as, various third party private entities within Narragansett Electric Company.



## **Short Form Sanction Paper**

### **2.2 Drivers**

The CSC budget is subdivided into three components: Reimbursable, Non-Reimbursable, and Reimbursements. Projects are categorized into these buckets based on the project funding source. Capital projects initiated by RIDOT are normally 100% reimbursable. Capital projects initiated by the NBC are typically reimbursable to some degree depending on criteria.

### **2.3 Project Description**

The estimated quantity for main replacement is 31,158 liner feet (5.90 miles).

### **2.4 Benefits**

Approximately 90% of the CSC Main Relays for the Narragansett Electric Company Territories will contribute an estimated 28,042 linear feet (5.31 miles) of Leak Prone Pipe (LPP) to the ISR Program.

### **2.5 Business & Customer Issues**

There are no significant business issues beyond what has been described elsewhere.

### **2.6 Alternatives**

**Alternative 1:** Doing nothing is not an option because we must comply with company policy (DAM01008) and regulatory requirements (220 CMR 113.00: M.G.L. c. 164).

### **2.7 Investment Recovery**

It is estimated that 100% of the funds are eligible for recovery through the 2015 Gas ISR program.

#### **2.7.1 Customer Impact**

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.889M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

## **3 Related Projects, Scoring, Budgets**

### **3.1 Summary of Projects**

The following are the Power Plant titles.



**Short Form Sanction Paper**

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRCC306, CRCC312, CRCC308, CRCC307	0	MAIN REPL PUB WORK NON-REIMB-BE GAS MAIN ENCROACH PARALLEL-BE GAS MAIN ENCROACH UNDERMINED-BE MAIN REPL PUB WORK REIMB-BE	5.920
<b>Total</b>			<b>5.920</b>

**3.2 Associated Projects**

NA

**3.3 Prior Sanctioning History**

NA

**3.4 Category**

Category	Reference to Mandate, Policy, NPV, or Other
<input checked="" type="radio"/> Mandatory	National Grid is required to relocate its facilities within the project limits that are in direct interference of the proposed construction and installation of new infrastructure facilities. National Grid is also required to follow the Regulatory Authority (220 CMR 113.00: M.G.L. c. 164), which is mandated.
<input type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	
<input type="radio"/> Other	

**3.5 Asset Management Risk Score**

Asset Management Risk Score:   49  

**Primary Risk Score Driver: (Policy Driven Projects Only)**

- Reliability     
 Environment     
 Health & Safety     
 Not Policy Driven



**Short Form Sanction Paper**

**3.6 Complexity Level**

High Complexity     Medium Complexity     Low Complexity     N/A

Complexity Score:   15  

**3.7 Next Planned Sanction Review**

Date (Month/Year)	Purpose of Sanction Review
June 2016	Sanction Closure

**4 Financial**

**4.1 Business Plan**

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY 16 -20 Gas Capital Plan - Budget file	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000

**4.1.1 If cost > approved Business Plan how will this be funded?**

N/A

**4.2 CIAC / Reimbursement**

\$M	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+	Total
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
CIAC/Reimbursement	0.000	1.327	0.000	0.000	0.000	0.000	0.000	1.327

The CIAC was calculated based on historical percentage of capital spend.



**Short Form Sanction Paper**

**4.3 Cost Summary Table**

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total	
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+		
CRCC306,	MAIN REPL PUB WORK NON-	Est Lvl (e.g. +/- 10%)	CapEx	-	5,562	-	-	-	-	-	-	5,562
CRCC312,	REIMB-BE		OpEx	-	-	-	-	-	-	-	-	-
CRCC308,	GAS MAIN ENCROACH		Removal	-	0,358	-	-	-	-	-	-	0,358
CRCC307	PARALLEL-BE		Total	-	5,920	-	-	-	-	-	-	5,920
<b>Total Project Sanction</b>			CapEx	-	5,562	-	-	-	-	-	-	5,562
			OpEx	-	-	-	-	-	-	-	-	-
			Removal	-	0,358	-	-	-	-	-	-	0,358
			Total	-	5,920	-	-	-	-	-	-	5,920

**4.4 Project Budget Summary Table**

**Project Costs Per Business Plan**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+	
CapEx	0.000	5,562	0.000	0.000	0.000	0.000	0.000	5,562
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0,358	0.000	0.000	0.000	0.000	0.000	0,358
<b>Total Cost in Bus. Plan</b>	<b>0.000</b>	<b>5,920</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>5,920</b>

**Variance (Business Plan-Project Estimate)**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total Cost in Bus. Plan</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

**5 Key Milestones**

Milestone	Target Date: (Month/Year)
Sanction Approval	March 2015
Construction Start Date	April 2015
Completion	March 2016
Closure Report	June 2016



**Short Form Sanction Paper**

**6 Statements of Support**

**6.1.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

<b>Role</b>	<b>Individual</b>	<b>Responsibilities</b>
<i>Construction</i>	Fromm, Walter	Constructability & Schedule
<i>Construction</i>	Lundquist, Gerard	Constructability & Schedule
<i>PE&amp;D</i>	Hunt, Laeyeng	Design, Liaison & System Reliability
<i>Investment Planning</i>	Pensabene, Patrick	Endorses relative to 5-year business plan
<i>Resource Planning</i>	Georgacopoulos, Artie	Endorses Resource, cost estimate, schedule and portfolio alignment
<i>Project Management</i>	Moore, Timothy	Endorses Resources, cost estimate, schedule

**6.1.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

<b>Reviewer List</b>	<b>Individual</b>
Finance	Fowler, Keith
Regulatory	Zschokke, Peter
Procurement	Curran, Art
Jurisdictional Delegates	Iseler, Dave
Control Center	Eagan, Mark

**6.1.3 List References**

N/A



**Short Form Sanction Paper**

**7 Decisions**

I:

- (a) APPROVE this paper and the investment of \$5.920M and a tolerance of +/-10%
- (b) NOTE that Thomas Mulkeen is the Project Manager and has the approved financial delegation.
- (c) NOTE: In the event that any Blanket/Program projects are not approved prior to the start of the FY2017 fiscal year, the FY2016 approval limits will remain in effect until such time as the FY2017 blanket/program projects are approved by USSC and/or other appropriate authority for approval.

Signature..........Date.....3-30-15.....

Executive Sponsor - John Donleavy, EVP and Chief Operating Officer



***Short Form Sanction Paper***

**8 Other Appendices**

NA

**8.1 *Sanction Request Breakdown by Project***

NA



**USSC Closure Paper**

<b>Title:</b>	FY 16-City State Construction/Public Works for Narragansett Electric Company	<b>Sanction Paper #:</b>	USSC-15-066C
<b>Project #:</b>	Multiple – See Appendix	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	03/30/2017
<b>Author:</b>	Laeyeng Hunt	<b>Sponsor:</b>	Tom Bennett, VP of Gas System Engineering
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Jonathan Falls

**1 Executive Summary**

This paper is presented to close multiple project #s (see appendix). The total spend was \$8.663M. The sanctioned amount for this project was \$5.920M.

*The final spend amount is \$8.663M broken down into:*

*\$8.333M Capex  
\$0.000M Opex  
\$0.330M Removal  
With a Reimbursement of \$0.985M*

**2 Project Summary**

The City/State Construction (CSC) Program for the Narragansett Electric Company consists of work driven by numerous municipalities that National Grid serves, as well as various third party private entities within the Narragansett Electric Company service area. This program is directed at replacing infrastructure that will be compromised by third party construction.

**3 Over / Under Expenditure Analysis**

**3.1 Summary Table**



**USSC Closure Paper**

Actual Spending (\$M)			
Project #	Description		Total Spend
Multiple - See Appendix	City State Construction/Public Works for Colonial Gas Company	Capex	8.333
		Opex	0.000
		Removal	0.330
		<b>Total</b>	<b>8.663</b>
<b>Total</b>		Capex	8.333
		Opex	0.000
		Removal	0.330
		<b>Total</b>	<b>8.663</b>

Project Sanction Summary Table			
<b>Project Sanction Approval (\$M)</b>			<b>Total Spend</b>
		<b>Capex</b>	<b>5.562</b>
		<b>Opex</b>	<b>0.000</b>
		<b>Removal</b>	<b>0.358</b>
		<b>Total Cost</b>	<b>5.920</b>
<b>Sanction Variance (\$M)</b>			<b>Total Spend</b>
		<b>Capex</b>	<b>(2.771)</b>
		<b>Opex</b>	<b>0.000</b>
		<b>Removal</b>	<b>0.028</b>
		<b>Total Variance</b>	<b>(2.743)</b>

**3.2 Analysis**

The major driver of the total cost variance for the CSC Program was the increase in spend for the various Narragansett Electric municipalities that impacted our facilities. The increased municipal spend had a corresponding affect on the CSC Program.

**4 Improvements / Lessons Learned**

The CSC Program is driven predominantly by the various Narragansett Electric municipalities and RIDOT work on our facilities. Although these are dynamic plans which are subject to change, increased tracking and communication of the various municipal plans may provide enhanced insight on the volume and scope of upcoming municipal projects. Continuing to improve, enhance, and update estimating tools with latest data will provide greater oversight over cost.



**USSC Closure Paper**

A new monthly process has been put in place by Resource Planning and others to ensure budget adherence and a balanced capital portfolio via the Zero Variance (ZVM) and Portfolio Calibration (PCM) Meetings. During these meetings, Resource Planning applies a holistic view of the capital portfolio, and identifies and carefully evaluates any changes to forecasts, and makes recommendations to ensure the capital portfolio remains on budget.

**5 Closeout Activities**

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) All work orders and funding projects have been closed  
Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:
- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed .
  - construction may cross multiple fiscal years
  - the work order closing process is within the late charge waiting period
  - other accounting processes or final system closing activities have not yet completed



**USSC Closure Paper**

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

(2) All as-builts have been completed

Program/Blanket projects may contain work orders for which no as-builts have yet been recorded for reasons including but not limited to:

- design and/or construction have not yet completed
- construction may cross multiple fiscal years
- work has completed recently and as-builts have not yet been processed into the system
- does not apply. Work order(s) are not linked to work management systems. (example: Meter Purchases, Meter Changes, AMR Installations Purchase Misc Capital Tools/Equipment, etc.)
- does not apply to Information systems projects.

(3) All lessons learned have been entered appropriately into the lesson learned database

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

**6 Statements of Support**

**6.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

<b>Department</b>	<b>Individual</b>	<b>Responsibilities</b>
Investment Planning	Pensabene, Patrick	Endorses relative 5-year Business Plan
Resource Planning	Falls, Jonathan	Endorses Resources, Cost Estimate, Schedule and Portfolio Alignment
Project Management	Wheeler, Brad	Endorses Resources, Cost Estimate,
Gas Project Estimation	Paul, Art	Endorses Cost Estimates

**USSC Closure Paper**



**6.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

<b>Function</b>	<b>Individual</b>
Finance	Collison, Mark
Regulatory	Zschokke, Peter
Jurisdictional Delegates	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul

**USSC Closure Paper**



**7 Decisions**

The US Sanctioning Committee (USSC) approved this paper on March 30<sup>th</sup>, 2017.

Signature *Ross W. Turrini*

Date April 27, 2017

Ross Turrini - Senior Vice President US Sanctioning Committee Co-Chair Person



Funding Project Information		Details	
Description	Corrosion-RI-	Funding Proj	CRRC301
Company	5360-Narragansett Electric	Accounts	
Bus Segment	RIGASD	Contacts	
Budget	CRRC301	Class Codes	
Department	43705360G - Corrosion Con	Justification	
	F. P. Type	Tax Status	
	P_Gas Distribution Construction RI	Authorizations	
Long Description	Corrosion		
Major Location	MASS PLANT - RI (Gas)	Asset Location	
Asset Loc Det			
Notes			
Reason		Approval Group	<none>
Est Start Date	4/1/2017	Late Charge Wait	0 Months
Est Complete	3/31/2018	In Service Date	
Est In Service	3/31/2018	Completion Date	
Est Annual Rev		First CPR Month	
Initiated By	DIACOM	Close Date	
Date Suspended		Date Initiated	11/8/2012

Audits
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Cancel FP
Suspend FP
Estimates
Update
Print
Close

Record 1 of 1    < < > >|

Funding Project Information
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<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 2px;">Title</td> <td style="border: 1px solid gray; padding: 2px;">Corrosion-RI-</td> </tr> <tr> <td style="padding: 2px;">Funding Project</td> <td style="border: 1px solid gray; padding: 2px;">CRRC301</td> </tr> </table>	Title	Corrosion-RI-	Funding Project	CRRC301	<div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Details</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Accounts</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Contacts</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Class Codes</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Justification</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Tax Status</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Authorizations</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">User Comment</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Review</div>
Title	Corrosion-RI-				
Funding Project	CRRC301				

**Class Codes**

Budget Plant Class	Gas Distribution PAM
Send to SE	

**Miscellaneous Billing**

Misc Billing Status	
---------------------	--

**Required**

Force Billing Flag	
RDY Allocation Eligible	

**Sanctioning Data**

DOA Amount	
Lower Tolerance	.90
Strategy Type Name	
Upper Tolerance	1.10

Indicates Display Only - (d) ▾

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Funding Project Information
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**New Approval Type**

**Funding Project**  **Revision**

**Approval Type**  **Amount**

**Status**  **Sent By**  **Date Sent**  **Date Appr**

+ Approver 1	-----	Approver	Required	Date Approved	Authority Limit
		<input type="text" value="Connolly, Christopher"/>	<input checked="" type="checkbox"/>	<input type="text" value="6/2/2015"/>	<input type="text" value="\$1,000,000"/>

**Budget Version**

Rev

Record  of 1

**Short Form Sanction Paper**



<b>Title:</b>	FY16 Proactive Main Replacement Program – Rhode Island	<b>Sanction Paper #:</b>	USSC-15-080
<b>Project #:</b>	CRCC203, CRCC204, CRCC205, CRCC206, CRCC207, CRCC208	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	March 25, 2015
<b>Author:</b>	James Finnerty	<b>Sponsor:</b>	Christopher Connolly – Acting VP – Gas Systems Engineering
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	James Finnerty

**1 Executive Summary**

**1.1 Sanctioning Summary**

This paper requests sanction of Projects CRCC203, CRCC204, CRCC205, CRCC206, CRCC207, and CRCC208 in the amount of \$46.137M with a tolerance of +/-10% for the purpose of full implementation.

This sanction amount of \$46.137M is broken down into:

- \$44.522M Capex
- \$0.000M Opex
- \$1.615M Removal

**1.2 Project Summary**

This program funds the replacement of Rhode Island’s inventory of Leak Prone Pipe (LPP), defined as pipe that is non-cathodically protected steel, whether bare or coated (collectively termed “unprotected steel”), as well as cast or wrought iron.

## **Short Form Sanction Paper**



### **2 Project Detail**

#### **2.1 Background.**

The 2014 inventory of LPP is 1,327 miles, which represents approximately 41% of the distribution system in Rhode Island. As demonstrated in Appendix 1- Rhode Island Leak Rate Graph, the 2014 leak rate for all distribution piping is 0.37 leaks per mile, reduced from 0.85 leaks per mile in 2009. The 2014 leak rate for LPP is 0.82 leaks per mile, reduced from the 1.40 leaks per mile in 2009.

#### **2.2 Drivers**

The goal of this program is to reduce the risk associated with leak prone pipe in Rhode Island's distribution system. The replacement of LPP and associated services is also supported by the Company's Distribution Integrity Management Plan (DIMP), which specifies that the Company implement measures to: know its system; understand the threats to its distribution piping system; and evaluate risks and prepare replacement programs to help mitigate the risks to its leak prone mains and services inventory.

#### **2.3 Project Description**

Approval is being requested for the necessary funding to replace approximately 56 miles of LPP via the Rhode Island Proactive Main Replacement Program. Gas Engineering has identified individual main segments for replacement based upon an analysis that considers pipe material and diameter, leak repair history, surrounding structures, and field conditions. Opportunities to take advantage of coordination with municipal projects and other National Grid programs and projects are also considered.

#### **2.4 Benefits**

The benefits of performing this work include;

- Elimination of approximately 234 open gas leaks
- Eliminating high risk services associated with the main replacement
- Reducing the risk and potential for incidents associated with leak prone pipe
- Improved community and government relations

#### **2.5 Business & Customer Issue**

**Short Form Sanction Paper**



This program improves the safety and reliability of Rhode Island's gas distribution system, thus increasing reliable gas service to customers and reducing both existing and potential future gas leaks.

**2.6 Alternatives**

**Alternative 1:**

Reduce this program to a lower rate of replacement. This option would replace only the quantity of main required to hold leak rates to present levels. This will also result in a loss of credibility with the Rhode Island Division of Public Utilities and Carriers, who has set an expectation for the aggressive replacement of leak prone pipe.

**2.7 Investment Recovery**

Investment recovery will be through the Gas Infrastructure Safety and Reliability Plan FY2016 proposal.

**2.7.1 Customer Impact**

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$9.350M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base

**3 Related Projects, Scoring, Budgets**

**3.1 Summary of Projects**

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRCC203, CRCC204, CRCC205, CRCC206, CRCC207, CRCC208		Various	46.137
<b>Total</b>			<b>46.137</b>

**Short Form Sanction Paper**



**3.2 Associated Projects:**

N/A

**3.3 Prior Sanctioning History:**

N/A

**3.4 Category**

Category	Reference to Mandate, Policy, or NPV Assumptions
<input type="radio"/> Mandatory	The program is in accordance with the Company's DIM Plan (as specified by US DOT, 49 CFR Part 192, Subpart P, entitled; "Gas Distribution Pipeline Integrity Management Plan")
<input checked="" type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	

**3.5 Asset Management Risk Score**

Asset Management Risk Score: 44

**Primary Risk Score Driver:** (Policy Driven Projects Only)

- Reliability       Environment       Health & Safety       Not Policy Driven

**3.6 Complexity Level**

- High Complexity       Medium Complexity       Low Complexity       N/A

Complexity Score: 15

**Short Form Sanction Paper**



**3.7 Next Planned Sanction Review**

Date (Month/Year)	Purpose of Sanction Review
June 2016	Sanction Paper Closure

**4 Financial**

**4.1 Business Plan**

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY16-FY20 Budget File-Gas	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000

**4.1.1 If cost > approved Business Plan how will this be funded? N/A**

**4.2 CIAC / Reimbursement**

\$M	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
CIAC/Reimbursement - N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

**4.3 Cost Summary Table**

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total		
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +			
					2015/16	2016/17	2017/18	2018/19	2019/20	2020/21			
CRCC203, CRCC204, CRCC205, CRCC206.	Various	±/- 10%	CapEx	-	44.522	-	-	-	-	-	-	44.522	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	1.615	-	-	-	-	-	-	-	1.615
			Total	-	46.137	-	-	-	-	-	-	-	46.137
Total Project Sanction			CapEx	-	44.522	-	-	-	-	-	-	44.522	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	1.615	-	-	-	-	-	-	1.615	
			Total	-	46.137	-	-	-	-	-	-	46.137	

**Short Form Sanction Paper**



**4.4 Project Budget Summary Table**

**Project Costs per Business Plan**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2015/16	Yr. 2 2016/17	Yr. 3 2017/18	Yr. 4 2018/19	Yr. 5 2019/20	Yr. 6 + 2020/21	
CapEx	0.000	44.522	0.000	0.000	0.000	0.000	0.000	44.522
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	1.615	0.000	0.000	0.000	0.000	0.000	1.615
<b>Total Cost in Bus. Plan</b>	<b>0.000</b>	<b>46.137</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>46.137</b>

**Variance (Business Plan-Project Estimate)**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2015/16	Yr. 2 2016/17	Yr. 3 2017/18	Yr. 4 2018/19	Yr. 5 2019/20	Yr. 6 + 2020/21	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total Cost in Bus. Plan</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

**5 Key Milestones**

Milestone	Target Date: (Month/Year)
Identify and Prioritize FY16Rhode Island LPP replacement candidates	August 2014
Complete detailed design and cost estimates	January 2015
Contractor Bids and Material Procurement	February 2015
Project Sanction Approval	March 2015
Start Applying for Permits	March 2015
Engage Contractors and In-House Resources	March 2015
Construction Start	April 2015
Construction Complete	March 2016
Project Closure Report	June 2016

**Short Form Sanction Paper**



**6 Statements of Support**

**6.1.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

<b>Role</b>	<b>Individual</b>	<b>Responsibilities</b>
Investment Planner	Pensabene, Patrick	Endorses relative to 5-year business plan or emergent work
Resource Planning	Vidal, Alfredo	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Moore, Timothy	Endorses Resources, cost estimate, schedule

**6.1.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

<b>Reviewer List</b>	<b>Individual</b>
Finance	Fowler, Keith; Horowitz, Philip
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Iseler, David G.
Procurement	Curran, Art
Control Center	Eagan, Mark J.

**6.1.3 List References**

N/A

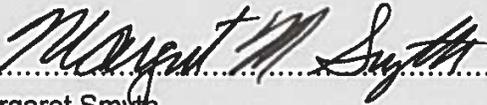
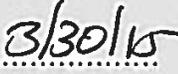
**Short Form Sanction Paper**



**7 Decisions**

The US Sanctioning Committee (USSC) at a meeting held on March 25, 2015:

- (a) APPROVED this paper and the investment of \$46.137M and a tolerance of +/- 10%
- (b) NOTED that James Finnerty has the approved financial delegation.
- (c) NOTE: In the event that any Blanket projects are not approved prior to the start of the FY2017 fiscal year, the FY2016 approval limits will remain in effect until such time as the FY2017 blanket projects are approved by USSC and/or other appropriate authority for approval.

Signature..........Date..........

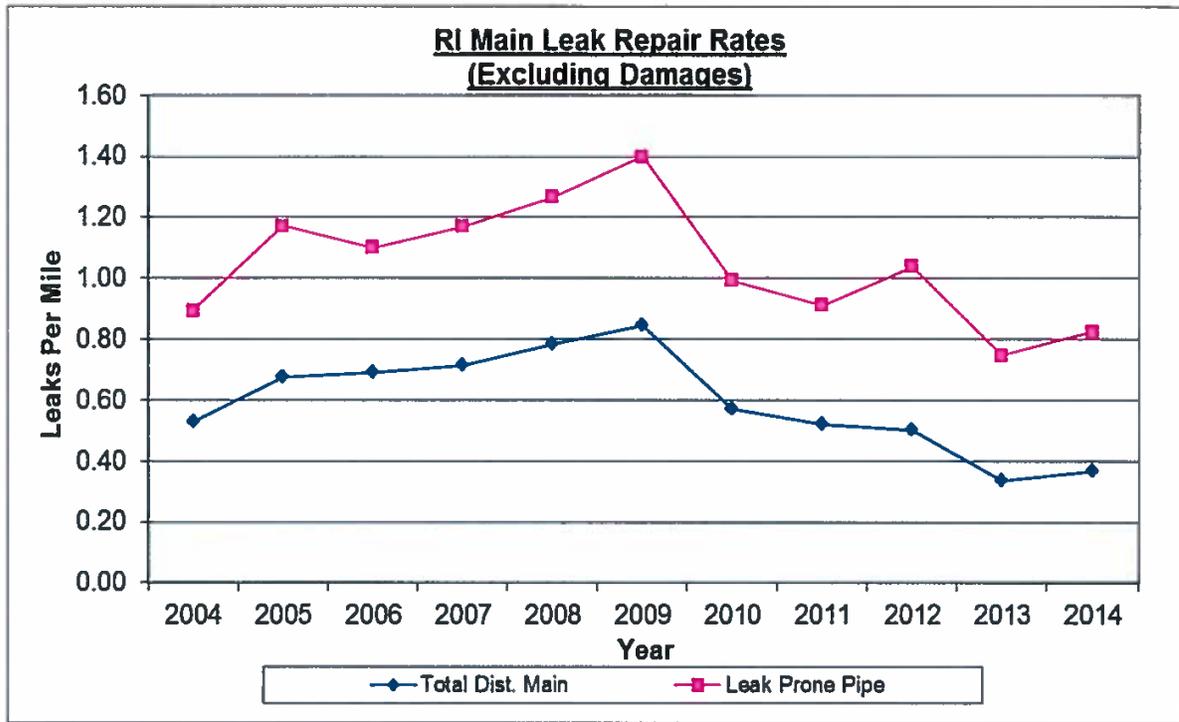
Margaret Smyth  
US Chief Financial Officer  
Chair, US Sanctioning Committee

Short Form Sanction Paper



8.0 Other Appendices

Appendix 1: Rhode Island Leak Repair Graph



**Short Form Sanction Paper**



**8.1 Sanction Request Breakdown by Project**

Work Order	Location	Town	Long Desc	Funding Project	Install Length(ft)
<b>Bare Steel</b>					
9000098210	Exeter St., Newport AR (main)	NPR	Install 279 ft of 2 inch plastic 99# main on Exeter St and abandon 910 ft of bare steel main	CRCC203	280
90000118396	Rego Ter (main)	MDT	950- As part of the 2013 BS/CI Main Replacement Program, Main & Service Replacement Program recommends the relay of: - Approx. 325 ft of 1.25-in BS and 4-in CI 10# main with 4-in PE 10# main in Rego Ter from E Main Rd to Maplewood Rd. Work schedule to	CRCC207	325
90000118568	Hartford Ave (main)	JOH	1058- As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of: - Approx. 1747 ft of 6-in BS 35# main with 8-in PE 35# main in Hartford Ave from #1427 to #1305. Wo	CRCC203	1792
90000116872	Pawtucket Ave Section 1 (main)	EPV	973 - As part of the FY15/16 Main Replacement Program, Main & Service Replacement Program recommends the relay of: - approx. 2239 ft of 6-in CI 5 psig (1912) main with 6-in PE 5 psig main in Pawtucket Ave from the take station at #3645 Pawtucket Ave to	CRCC207	2739
90000118388	E Main Rd (main)	MDT	946 - As part of the 2013 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of: - Approx. 1853 ft of 4-in CI 10# main with 8-in PE 10# main in E Main Rd from Wall Rd to #741 E Main Rd, and - Approx. 126 ft of 2-in B	CRCC207	1853
90000118581	Atwood Ave (main)	JOH	1061 - As part of the 2013 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of: - Approx. 3031 ft of 8-in BS 35# main with 8-in PE 35# main in Atwood Ave from #1178 to #973. Work schedule due to leak score.	CRCC203	3346
90000135276	Clark St (main)	WLY	1222 - As part of the 2015 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of	CRCC203	1864
90000146502	5-221 Heritage Rd, NKS (Main)	NKS	1210 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	5550
90000146429	16-47 Manchester St, WWW (main)	WWW	1620-As part of the FY15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of	CRCC203	580
90000146540	5-21 Pickett Rd, EPV (main)	EPV	1197- As part of the FY15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of.	CRCC203	1880
90000146544	21- 164 Natick Ave, CRA (main)	CRA	1173 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of.	CRCC203	2015
90000146460	41-72 Everett ST, WAN	WAN	1625-As part of the FY15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of	CRCC203	450
90000146492	1-12 Circle Rd, SMF (main)	SMF	1216 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of.	CRCC203	2475

Short Form Sanction Paper



90000146500	13-27 Redwood Dr, NPV (main)	NPV	1630 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	1200
90000146522	72-114 Old Pocasset Rd, JOH (main)	JOH	1199 As part of the FY15/16 BS Main Replacement Program, Main & Service Replacement Program recommends:	CRCC203	3675
90000146595	1-60 Highland Rd, BST (main)	BST	1634- As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	5125
90000146658	44-92 Christopher St, PVD (main)	PVD	1554 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	1330
90000142547	887-1055 Greenwich Ave, WWK (main)	WWK	1569 As part of the FY 15/16 Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	2465
90000142814	1-4 Tiffany Ci, BRG (main)	BRG	1163 - As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	2200
90000142831	82-194 E View St, CRA (main)	CRA	1172-As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	2745
90000146455	295-317 Market St, WAN (main)	WAN	1626-As part of the FY15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of	CRCC203	1100
90000146488	11-66 Beach St, WAN (main)	WAN	1624-As part of the FY15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of	CRCC203	880
90000146494	18-37 Spencer Rd, SMF (main)	SMF	1627 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	3095
90000146520	12-27 Reservoir Ave, LNC (main)	LNC	1631 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	1035
90000146585	5-104 Woodlawn Dr, CRA (main)	CRA	1175 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	2215
90000142785	2-8 Centennial Ave, BRG (main)	BRG	Actively Corroding Project 1162 - As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	295
90000145784	3-25 Dayton St, WLY	WLY	Work schedlued due to paving 1615 As part of the FY15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	665
90000146446	2-66 Margin St, WLY (main)	WLY	1616 As part of the FY15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of	CRCC203	2970

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90000146542	12-130 Mockingbird Dr, CRA (main)	CRA	Main only project, no services associated 1179 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	3990
90000146589	187-272 Arnold Rd, COV (main)	COV	1167 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	1905
90000142421	1277-1321 Main St, WWW (main)	WWW	1220-As part of the FY15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of	CRCC203	730
90000146528	6-56 Coyle St , EPV (main)	EPV	1632- As part of the FY15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	1040
90000146583	171-252 Whiting St, CRA (main)	CRA	1551 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	1685
90000146654	17-55 Sixth st, EGW (main)	EGW	1185 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	2285
90000138768	2-74 Chachapacasse Rd, BRG	BRG	Work scheduled due to paving 1156 - As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	2435
90000142780	17-158 Union St, BST (main)	BST	Urgent Actively Corroding- complete ASAP 1605- As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	1000
90000143017	57-67 Carpenter Dr , JOH (main)	JOH	1202 As part of the FY15/16 BS Main Replacement Program, Main & Service Replacement Program recommends:	CRCC203	2440
90000145676	1-22 Joseph St, WLY (main)	WLY	Work scheduled due to fall paving 1611- As part of the FY15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of: -Work scheduled ahead of paving	CRCC203	3570
90000146444	217-360 Bradford St, WLY	WLY	1618 As part of the FY15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	2825
90000146546	6-65 Sweet Meadow Dr, CRA (main)	CRA	1174 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	930
90000142444	12-57 Almy St, WWK (main)	WWK	Actively Corroding Project 1557 As part of the Fy 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	540
90000142538	1-4 Spectacle St, CRA (main)	CRA	1548 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends:	CRCC203	
90000142818	33-71 Water Way St, BRG	BRG	Actively Corroding Project 1158 - As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	2085

Short Form Sanction Paper



90000146450	4-28 Yankee Dr, WLY (main)	WLY	Actively Coroding Project 1617 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	1590
90000142570	4-40 Lima St, WWK (warwick)	WWK	Actively Coroding Project 1573 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	715
90000142625	43-131 Trinity St, WWK (main)	WWK	Actively Coroding Project 1587 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of: c	CRCC203	2335
90000142677	3-25 Tucker Rd, SMF (main)	SMF	Actively Coroding Project 1553 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	2480
90000146490	3-40 Farnum PL, SMF (main)	SMF	1213 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	1070
90000146591	10-86 Blanding Ave, BRG	BRG	1160 - As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of: -aprx 1085 ft of 2-in BS 35# main in Blanding Ave with 2-in PE 35# main from Ocean Ave to Latham Ave	CRCC203	2090
90000142529	688-750 Commonwealth Ave, WWK (main)	WWK	Actively Coroding Project & scheduled ahead of paving 1567 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of: -Ahead of fall paving	CRCC203	870
90000142619	41-81 Sweet st, WWK (main)	WWK	Actively Coroding Project 1584 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	840
90000146498	189-205 Elm Dale Ave, PVD (main)	PVD	Actively Coroding Project 1629 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	330
90000146664	819-882 Greenwich Ave, WWK (main)	WWK	Actively Coroding Project 1570 - As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	995
90000131011	Lucas Rd, Tapaz Dr (main)	WWK	1228 - As part of the 2015 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	4006
90000142515	215-330 Crestwood Rd, WWK (main)	WWK	Actively Coroding Project 1565 As part of the 2015 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	1945
90000142591	9-193 Northup St, WWK (main)	WWK	Actively Coroding Project 1579 As part of the FY 15/16 Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	3105
90000142638	5-39 Tieman Ave, WWK (main)	WWK	Actively Coroding Project 1589 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	405
90000146436	943-1099 Main Ave, WWK (main)	WWK	Actively Coroding Project 1621 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	1460

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90000146526	22-49 Breeze Ave . EPV (main)	EPV	Actively Corroding Project 1189- As part of the FY15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	230
90000146587	14-45 Woodrow Ave, CRA (main)	CRA	Actively Corroding Project 1552 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	570
90000146660	255-274 Taft St, PAW (main)	PAW	Actively Corroding Project 1555 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	240
90000142427	8-50 Epworth Ave, WWW (main)	WWW	Actively Corroding Project 1547-As part of the FY15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of	CRCC203	535
90000142461	13-83 Alpine St, WWK (main)	WWK	Actively Corroding Project 1559 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	1060
90000142605	2168-2238 Elmwood Ave, WWK (main)	WWK	Actively Corroding Project 1582 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	1920
90000119984	11 Cypress St (main)	WWK	Actively Corroding Project 761 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of: -	CRCC203	105
90000142434	23-27 Elbow St , WWW (main)	WWW	Actively Corroding Project 1219-As part of the FY15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of	CRCC203	210
90000142613	35-129 Red Chimney Dr, WWK (main)	WWK	Actively Corroding Project 1583 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	1810
90000142469	15-88 Beaver Ave, WWK(main)	WWK	Actively Corroding Project 1563 As part of the Fy 15/16 Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	1880
90000142632	144-261 Tennyson Rd, WWK (main)	WWK	Actively Corroding Project 1588 As part of the FY 15/16 BS I Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	3045
90000131005	Norwood Ave (main)	WWK	1227 - As part of the 2015 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	3355
90000142640	351-588 Warwick Neck Ave, WWK (main)	WWK	Actively Corroding Project 1592 As part of the Fy 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	4050
90000146434	100-135 Meadow St, WWK (main)	WWK	Actively Corroding Project 1622 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	665
90000146593	4-8 Siegel St, BST (main)	BST	Actively Corroding Project 1633- As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of: -aprx 135 ft of 2-in BS LP main in Siegel St with 4-in PE LP main from existing 4-in PE LP main to EOM	CRCC203	135

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90000146438	2-94 Alger Ave, WWK (main)	WWK	Actively Corroding Project 1558 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	985
90000142815	170 Beckwith St, CRA	CRA	Actively Corroding Project 1562 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	180
90000142764	1294 Atwood Ave, JOH (main)	JOH	Actively Corroding Project Main only project, no services associated 1198 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends:	CRCC203	110
90000146496	1-5 Lynch St, PVD (main)	PVD	Actively Corroding Project 1628 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC203	195
90000138860	60-84 Washington St, BST	BST	1339- As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of: -aprx 350 feet of 3-in BS, LP main in Monroe Ave with 6-in plastic main from Bay Side Ave to EOM	CRCC203	850
90000150324	1-122 Apple Tree Ln, WWK	WWK	Work scheduled due to water/sewer work 1647: As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of: -aprx 950 ft of 2-in BS 35# main in Wauregan Dr with 2-in PE 35# main with 2-in PE	CRCC203	3915
<b>Cast Iron</b>					
90000142773	9-50 Monroe St, BST (main)	BST	1140- As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	1235
90000142525	50-81 Roger Willams Ct- PVD (Main)	PVD	1459 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	430
90000142536	240-409 Elm St, WWK (main)	WWK	1593 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	4030
90000142594	24-112 Holden St- PVD (main)	PVD	1603 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	2155
90000142714	700- 765 Broadway, EPV (main)	EPV	1525- As part of the FY15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	6000
90000142727	22 Morris Av, EPV (Main)	EPV	1365 As part of the 2015 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	225
90000142426	143-391 Knight St, WSO (main)	WSO	1390 As part of the FY15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	3650
90000142600	99-200 Isabella Ave- PVD (main)	PVD	1441 As part of the FY15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	4860

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90000142702	5-45 Parker Ave, NPR (main)	NPR	1372-As part of the FY15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	150
90000142423	40-162 Mitris BLVD, WSO (service)	WSO	1394 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	1335
90000142604	10-51 Adelphi Ave- PVD (main)	PVD	Work ahead of Providence water work 1527 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	1465
90000142742	45-85 Pacific St CFL (main)	CFL	Work scheduled ahead of paving 1609 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	690
90000142774	1-105 Manuel Ave, JOH (Main)	JOH	1606 As part of the FY15/16 CI Main Replacement Program, Main & Service Replacement Program recommends:	CRCC207	1405
90000142777	5-22 Oakland Ave, JOH	JOH	1484 As part of the FY15/16 CI Main Replacement Program, Main & Service Replacement Program recommends:	CRCC207	585
90000142835	5-28 Kinsman St, CLD (main)	CLD	1360: As part of the FY 15/16 Cast Iron Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	770
90000143019	372-430 Greenville Ave, JOH	JOH	1200 As part of the FY15/16 BS Main Replacement Program, Main & Service Replacement Program recommends:	CRCC207	2085
90000142719	133-153 Deer St, EPV	EPV	1602 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	265
90000142740	531- 628 Warren Ave, EPV	EPV	1370 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	4650
90000143077	90-118 Argol St, PVD(Main)	PVD	1402: As part of the FY15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	2220
90000142575	11-125 Grand View St- PVD (service)	PVD	1435 As part of the FY15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	2205
90000142590	103-415 Harris St, PVD (main)	PVD	1438 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	7020
90000142447	2-29 Margaret St- PVD (main)	PVD	1454 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	510
90000142471	31-169 Pratt St- PVD(main)	PVD	1536 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	2215

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90000142535	225-300 Weybosset St- PVD (main)	PVD	1133 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	3535
90000142568	101-191 Gallatin St, PVD (service)	PVD	1534 As part of the FY15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	2120
90000142693	4-33 Gladstone St, SMF (main)	SMF	1604 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	1245
90000142709	1431-1530 Smithfield Ave, LNC (main)	LNC	1481 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	2010
90000142430	15- 143 Knight St, WSO (main)	WSO	1389 As part of the FY15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	2565
90000142564	194-276 Gano St- PVD (main)	PVD	Work to be done ahead of providence water work 1432 As part of the FY15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	3645
90000142581	94-151 Grotto Ave- PVD (main)	PVD	1436 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	805
90000142630	124-220 Lany St- PVD (service)	PVD	1428 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends:	CRCC207	
90000142721	14-105 Hazard Ave, EPV (main)	EPV	1383 - As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	3660
90000142729	106-241 Orchard St, EPV (main)	EPV	1366 As part of the 2015 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	3235
90000142836	152-175 Elwyn St, CRA (main)	CRA	1350 As part of the FY 14/15 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	760
90000145789	6-12 Cherry St, PAW	PAW	1613 As part of the FY 15/16 Main Replacement Program, Main & Service Replacement Program recommends the relay of	crcc207	210
90000142618	762-822 Charles St- PVD (service)	PVD	1526 As part of the FY15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	2255
90000142636	1-44 Edward St- PVD (main)	PVD	1429 As part of the FY15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	415
90000142686	51-83 Farn St, PVD (main)	PVD	1424 As part of the 2015 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	1110

Short Form Sanction Paper



90000142781	1073-1209 Plainfield St, JOH (main)	JOH	1485 As part of the FY15/16 CI Main Replacement Program, Main & Service Replacement Program recommends:	CRCC207	3820
90000142821	11-39 Brewster Rd, CRA	CRA	1356 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	1530
90000143080	10-208 Enfield St- PVD (main)	PVD	1423 As part of the 2015 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	4775
90000143084	17-22 James St- PVD (main)	PVD	1444 As part of the 2015 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	375
90000142519	6-210 Rounds Ave- PVD (main)	PVD	1458 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	1810
90000142685	15-175 Oregon St, PAW (main)	PAW	1514 As part of the FY15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	3010
90000142698	1370-1535 Smith St, NPV (main)	NPV	1489 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	3195
90000142700	1-23 Edendale Dr, LNC (main)	LNC	1479 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	2005
90000142735	2780-3048 Pawtucket Ave, EPV (main)	EPV	971- As part of the FY15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	4965
90000142829	90-116 Hewes st, CLD(main)	CLD	1359: As part of the FY 15/16 Cast Iron Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	2470
90000142845	40-80 Overhill st, CRA (main)	CRA	1353 As part of the FY 15/16 BS Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	3035
90000143088	142-176 6th St- PVD (main)	PVD	1461 As part of the FY15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	680
90000142614	216-266 Brown St PVD (Main)	PVD		CRCC207	1775
90000142457	417-506 Morris Ave- PVD (main)	PVD	1455 As part of the Fy 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	2250
90000142585	10-94 Grotto Ave- PVD (main)	PVD	1437 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	3385

Short Form Sanction Paper



90000142784	17-137 Gordon St, CRA	CRA	1346 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	3905
90000142688	80-91 Friendship st-PVD (main)	PVD	1532 As part of the FY 15/16CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	1740
90000142852	30-143 Rockwood Ave, CRA (main)	CRA	1354 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	2630
90000142858	Ave, CRA (main)	CRA	1355 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	1835
90000143086	556-652 Public St- PVD (main)	PVD	1540 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	1350
90000142854	10-85 St Mary's Dr, CRA (main)	CRA	1544 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	1475
90000142530	999-1089 Smith St- PVD (main)	PVD	1466 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	2660
90000142696	Mineral Spring Ave, NPV	NPV	1488 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	2795
90000142828	681-618 Dyer Ave, CRA (main)	CRA	1349 As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	2870
90000142280	133-185 Cross St, CFL (main)	CFL	1608 As part of the FY15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	2255
90000143073	5-95 Cushing St, PVD (main)	PVD	1418 As part of the FY15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	1645
90000142626	Douglas Ave 392-498, PVD	PVD	1420 As part of the FY15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	2690
90000142441	4-48 Montague St- PVD (main)	PVD	1452 As part of the FY15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	2115
90000142634	64-249 Eastwood Ave - PVD (service)	PVD	1528 As part of the 2015 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	2700
90000142733	327-531 Warren Ave, EPV (Main)	EPV	1369 As part of the 2015 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	2815
90000139526	11-108 Bliss St, EPV,	EPV	1345- As part of the FY 15/16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of: - Aprx 1470 feet of 6-in CI LP main in Bliss st with 6-in PE LP main from S Broadway to 108 Bliss St	CRCC207	2420
90000152055	12-49 Waldo St, PAW (main)	PAW	Work scheduled ahead of paving 1650 As part of the FY 15-16 CI Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC207	1565
<b>Aldyl-A Replacement</b>					
90000145782	269-315 High St, WLY	WLY	1614 As part of the FY15/16 Aldyl-A Main Replacement Program, Main & Service Replacement Program recommends the relay of:	CRCC208	2285
90000151877	1-33 W Beach St, WLY (main)	WLY	1648 As part of the FY15/16 Aldyl-a Main Replacement Program, Main & Service Replacement Program recommends the relay of: -aprx 1875 ft of 3-in PE LP in W Beach St with 6-in PE LP main from Beach St to EOM	CRCC208	3760



**USSC Closure Paper**

<b>Title:</b>	FY16 Rhode Island Proactive Main Replacement Program	<b>Sanction Paper #:</b>	USSC-15-080C
<b>Project #:</b>	Multiple—See Appendix	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	3/30/2017
<b>Author:</b>	Dana Wolkiewicz	<b>Sponsor:</b>	John Stavrakas – VP Gas Asset Management
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Bill Mycroft

**1 Executive Summary**

This paper is presented to multiple project numbers—see appendix. The total spend was \$58.433M. The sanctioned amount for this project was \$46.140M.

*The final spend amount is \$58.433M broken down into:*

- \$57.646M Capex
- \$0.001M Opex
- \$0.786M Removal

**2 Project Summary**

This program funds the replacement of Rhode Island's inventory of Leak Prone Pipe (LPP), defined as pipe that is non-cathodically protected steel, whether bare or coated (collectively termed "unprotected steel"), as well as cast or wrought iron.



**USSC Closure Paper**

**3 Over / Under Expenditure Analysis**

**3.1 Summary Table**

Actual Spending (\$M)			
Project #	Description		Total Spend
Various (see appendix)	Rhode Island Proactive Main Replacement Program	Capex	58.433
		Opex	0.001
		Removal	0.786
		<b>Total</b>	<b>59.220</b>
<b>Total</b>		Capex	58.433
		Opex	0.001
		Removal	0.786
		<b>Total</b>	<b>59.220</b>

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	44.520
		Opex	0.000
		Removal	1.620
		<b>Total Cost</b>	<b>46.140</b>
Sanction Variance (\$M)			Total Spend
		Capex	(13.913)
		Opex	(0.001)
		Removal	0.834
		<b>Total Variance</b>	<b>(13.080)</b>

**3.2 Analysis**

Under the Rhode Island Main Replacement Program, the Company has replaced 51.5 miles of targeted 56 miles of LPP. The variance of \$13.080M for the program was due to an outdated Rhode Island estimating tool that does not incorporate more current construction costs into the budget value developed.

**4 Improvements / Lessons Learned**

Unit costs are being updated to improve the accuracy of project estimating. Improvements to track project costs have provided for better accuracy of year-end spending projections. The Monthly Zero Variance and PCM meetings instituted in FY17 will ensure that sanctioned spending levels are not exceeded without executive approval.



**USSC Closure Paper**

**5 Closeout Activities**

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

(1) All work orders and funding projects have been closed  
Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:

- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed .
- construction may cross multiple fiscal years
- the work order closing process is within the late charge waiting period
- other accounting processes or final system closing activities have not yet completed

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

(2) All as-builts have been completed

Program/Blanket projects may contain work orders for which no as-builts have yet been recorded for reasons including but not limited to:

- design and/or construction have not yet completed
- construction may cross multiple fiscal years



**USSC Closure Paper**

- work has completed recently and as-builts have not yet been processed into the system
- does not apply. Work order(s) are not linked to work management systems. (example: Meter Purchases, Meter Changes, AMR Installations Purchase Misc Capital Tools/Equipment, etc.)
- does not apply to Information systems projects.

(3) All lessons learned have been entered appropriately into the lesson learned database

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

**6 Statements of Support**

**6.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibilities
Investment Planning	Pensabene, Patrick M.	Endorses relative to 5-year business plan or emergent work
Resource Planning	Falls, Jonathan	Endorses resources, cost estimate, schedule, and portfolio alignment
Project Management	Fortier, Joesph T (JT)	Endorses Resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Endorses Cost Estimate

**6.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

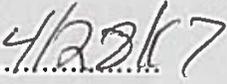
Function	Individual
Finance	Easterly, Patricia
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Louis



**USSC Closure Paper**

**7 Decisions**

The Senior Executive Sanctioning committee (SESC) approved this paper on 3/30/2017.

Signature..........Date..........

Margaret Smyth  
US Chief Financial Officer  
Chair, Senior Executive Sanctioning Committee



**USSC Closure Paper**

**8 Appendix**

Sanction Paper Number	Original Approved Amount	#P Proj No	FP Proj Descr	Capex	Opex	Removal	Total
USSC-15-080	\$ 46,137,000	CON0034	RI-GAS-MAIN REPL-AGE-RI BLNKT	\$9,627,676	\$911	\$101,166	\$9,729,753
		CON0040	RI-GAS-REPL SERV INSTALL-RI BLANKET	(\$1,183)	\$0	\$0	(\$1,183)
		CRCC203	BARE STEEL MAIN REPLACE-RI	\$17,693,001	\$708	\$212,168	\$17,905,877
		CRCC206	CI MAIN REPLACE 10" 12" 14"-RI	\$1,542		\$0	\$1,542
		CRCC207	CI MAIN REPLACE < 10"-RI	\$30,065,413	(\$536)	\$434,967	\$30,499,844
		CRCC208	PLASTIC MAIN REPLACEMENT-RI	\$258,889	\$0	\$37,949	\$296,839
<b>USSC-15-080 Sum</b>				<b>\$57,645,339</b>	<b>\$1,083</b>	<b>\$786,250</b>	<b>\$58,432,673</b>



**Short Form Sanction Paper**

<b>Title:</b>	FY16 Service Replacement – Reactive Blanket – Rhode Island	<b>Sanction Paper #:</b>	USSC-15-232
<b>Project #:</b>	Various Projects	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	April 8, 2015
<b>Author:</b>	Fred Amaral	<b>Sponsor:</b>	Neil Proudman – VP Gas Operations, NE
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Fred Amaral

**1 Executive Summary**

**1.1 Sanctioning Summary**

This paper requests the sanction of CRFS210, CRFN210, CRFN309, CRFS309, CCRFN310, CRFS310, CRFN219, and CRFS219 in the amount of \$8.050M with a tolerance of +/- 10% for the purposes of full implementation.

*This sanction amount is \$8.050M broken down into:*

- \$6.583M Capex*
- \$0.000M Opex*
- \$1.467M Removal*

**1.2 Project Summary**

This program funds the Service Replacement – Reactive Program for Narragansett Electric Company. The work in this category is non-discretionary, and is randomly generated through public leak reports, programmed leak survey, mandated activities, and customer generated requests.

**2 Project Detail**

**2.1 Background**

This proposed blanket investment is to provide approved funding for the reactive replacement of gas services to address leaks and non-leak work activities that fall outside the normal scope of the integrity, reliability, public works and growth programs.

The proactive main and service replacement programs upgrade existing customer services prioritized by risk based on pressure, material, vintage, location, and select other variables. The potential for leakage and other maintenance activities on the



## **Short Form Sanction Paper**

remaining services exists and requires a reactive response to correct the deficiency which is the focus of this request.

### **2.2 Drivers**

The goal of this program is to reduce the risk associated with service leaks, damages, service abandonments due to inactivity or demolition requests, customer driven relocations of existing services, and other substandard conditions. The Drivers for this category are both Safety and Reliability.

### **2.3 Project Description**

Approval is being requested for the necessary funding to replace as identified service leaks, damages, service abandonments due to inactivity or demolition requests, customer driven relocations of existing services, and other substandard conditions.

### **2.4 Benefits**

The benefits of performing this work include:

- Elimination of the risk associated with these services.
- Improved community and government relations
- Ensure Regulatory compliance associated with leak repair, emergency response and inactive service abandonment
- Customer satisfaction with respect to meeting their specific requests regarding relocations and abandonments for demolitions

### **2.5 Business & Customer Issues**

There are no significant business issues beyond what has been described elsewhere.

### **2.6 Alternatives**

These work activities are random, emergency driven, mandated and customer driven in nature, therefore, there is not an alternative to completing the activities.



**Short Form Sanction Paper**

**2.7 Investment Recovery**

Investment recovery will be through standard rate recovery mechanisms.

**2.7.1 Customer Impact**

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$1.382M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

**3 Related Projects, Scoring, Budgets**

**3.1 Summary of Projects**

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CCFN219, CCFS219	NA	Capital Service Leak Repair	6.878
CCFN210, CCFS210, CCFN310, CCFS310, CCFN309, CCFS309	NA	Capital Service Non-Leak Repair	1.173
<b>Total</b>			<b>8.051</b>

For Power Plant Load: CRFN219 – \$6.878m; CRFN \$1.172m

**3.2 Associated Projects**

N/A

**3.3 Prior Sanctioning History**

N/A

**3.4 Category**

Category	Reference to Mandate, Policy, or NPV Assumptions
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**Short Form Sanction Paper**

<input checked="" type="radio"/> Mandatory  <input type="radio"/> Policy- Driven  <input type="radio"/> Justified NPV	Mandatory work activities related to emergency response and regulatory compliance as stipulated in the National Grid Maintenance Plan, DOT192 and State Requirements.  There is also Policy-Driven work included in this sanctioning related to customer driven requests.
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**3.5 Asset Management Risk Score**

Asset Management Risk Score: 40 (leaks)/21 (non-leak – Other)

**Primary Risk Score Driver:** (Policy Driven Projects Only)

- Reliability     
 Environment     
 Health & Safety     
 Not Policy Driven

**3.6 Complexity Level**

- High Complexity     
 Medium Complexity     
 Low Complexity     
 N/A

Complexity Score:   15  

**3.7 Next Planned Sanction Review**

Date (Month/Year)	Purpose of Sanction Review
June 2016	Sanction Paper Closeout

**4 Financial**

**4.1 Business Plan**



**Short Form Sanction Paper**

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY16 - FY20_Gas- Budget_File	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000M

**4.1.1 If cost > approved Business Plan how will this be funded?**

N/A

**4.2 CIAC / Reimbursement**

\$M	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
CIAC/Reimbursement-N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

**4.3 Cost Summary Table**

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total		
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +			
CCFN219, CCF219	Capital Service Leak Repair	Est Lvl (e.g. +/- 10%)	CapEx	-	6.188	-	-	-	-	-	-	6.188	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	0.690	-	-	-	-	-	-	-	0.690
			Total	-	6.878	-	-	-	-	-	-	-	6.878
CCFN210, CCF210, CCFN310, CCF310, CCFN309, CCF309	Capital Service Non-Leak Repair	Est Lvl (e.g. +/- 10%)	CapEx	-	0.395	-	-	-	-	-	-	0.395	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	0.778	-	-	-	-	-	-	-	0.778
			Total	-	1.173	-	-	-	-	-	-	-	1.173
Total Project Sanction			CapEx	-	6.583	-	-	-	-	-	-	6.583	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	1.467	-	-	-	-	-	-	1.467	
			Total	-	8.050	-	-	-	-	-	-	8.050	

**4.4 Project Budget Summary Table**



**Short Form Sanction Paper**

**Project Costs per Business Plan**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2015/16	Yr. 2 2016/17	Yr. 3 2017/18	Yr. 4 2018/19	Yr. 5 2019/20	Yr. 6+ 2020/21	
CapEx	0.000	6.583	0.000	0.000	0.000	0.000	0.000	6.583
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	1.467	0.000	0.000	0.000	0.000	0.000	1.467
<b>Total Cost in Bus. Plan</b>	<b>0.000</b>	<b>8.050</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>8.050</b>

**Variance (Business Plan-Project Estimate)**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2015/16	Yr. 2 2016/17	Yr. 3 2017/18	Yr. 4 2018/19	Yr. 5 2019/20	Yr. 6+ 2020/21	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total Cost in Bus. Plan</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

**5 Key Milestones**

Milestone	Target Date: (Month/Year)
Sanction Paper Approval	March 2015
Construction Start Date	April 2015
Construction Complete	March 2016
Closure Paper	June 2016

**6 Statements of Support**

**6.1.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

Role	Individual	Responsibilities
Investment Planner	Pensabene, Patrick	Endorses relative to 5-year business plan or emergent work
Resource Planning	Georgacopoulos, Artie	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Moore, Timothy	Endorses Resources, cost estimate schedule



**Short Form Sanction Paper**

**6.1.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

<b>Reviewer List</b>	<b>Individual</b>
Finance	Keith Fowler, Philip Horowitz
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Iseler, David
Procurement	Curran, Art
Control Center	Eagan, Mark J.

**6.1.3 List References**

N/A

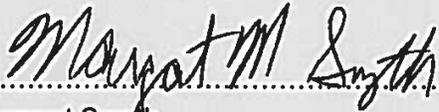
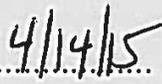


**Short Form Sanction Paper**

**7 Decisions**

The US Sanctioning Committee (USSC) at a meeting held on April 8, 2015:

- (a) APPROVE this paper and the investment of \$8.050M and a tolerance of +/- 10%
- (b) NOTE that Fred Amaral is the Project Manager and has the approved financial delegation.
- (c) NOTE: In the event that any Blanket projects are not approved prior to the start of the FY2017 fiscal year, the FY2016 approval limits will remain in effect until such time as the FY2017 blanket projects are approved by USSC and/or other appropriate authority for approval.

Signature..........Date..........  
Margaret Smyth  
US Chief Financial Officer  
Chairman, US Sanctioning Committee



**Short Form Sanction Paper**

**8 Other Appendices**

N/A

**8.1 *Sanction Request Breakdown by Project***

N/A



**USSC Closure Paper**

<b>Title:</b>	FY16 Mandated-Reactive Main/Service Replacements – Rhode Island	<b>Sanction Paper #:</b>	USSC-15-232C
<b>Project #:</b>	Various – See Appendix	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	3/30/2017
<b>Author:</b>	Kevin Browne	<b>Sponsor:</b>	Neil Proudman, VP Maintenance & Construction NE Gas
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Steve Lannon

**1 Executive Summary**

This paper is presented to close various funding projects – see Appendix. The total spend was \$10.343M. The sanctioned amount for this project was \$8.050M.

*The final spend amount is \$10.343M broken down into:*

- \$8.179M Capex*
- \$0.002M Opex*
- \$2.162M Removal*

**2 Project Summary**

This program funds the Service Replacement — Reactive Program for Narragansett Electric Company. The work in this category is non-discretionary, and is randomly generated through public leak reports, programmed leak survey, mandated activities, and customer generated requests.

USSC Closure Paper



**3 Over / Under Expenditure Analysis**

**3.1 Summary Table**

Actual Spending (\$M)			
Project #	Description		Total Spend
Various – See Appendix	FY16 Mandated-Reactive Main/Service Replacements – Rhode Island	Capex	8.179
		Opex	0.002
		Removal	2.162
		<b>Total</b>	<b>10.343</b>
<b>Total</b>		Capex	8.179
		Opex	0.002
		Removal	2.162
		<b>Total</b>	<b>10.343</b>

Project Sanction Summary Table			
<b>Project Sanction Approval (\$M)</b>			<b>Total Spend</b>
		Capex	6.583
		Opex	0.000
		Removal	1.467
		<b>Total Cost</b>	<b>8.050</b>
<b>Sanction Variance (\$M)</b>			<b>Total Spend</b>
		Capex	(1.596)
		Opex	(0.002)
		Removal	(0.695)
		<b>Total Variance</b>	<b>(2.293)</b>



**USSC Closure Paper**

**3.2 Analysis**

The excess in leak receipts against plan may have been a contributing factor to the budget overrun.

**4 Improvements / Lessons Learned**

Unit costs are being updated to improve the accuracy of project estimating. These are being updated by the Process and Performance group (Gary Bennett, Director) under the Project Management, Complex Construction, and Resource Planning (PMCCRP) organization under Cedric Williams, VP. Should be at the program level, and it is to improve budgeting. Improvements to track project costs have provided for better accuracy of year-end spending projections. The Monthly Zero Variance and PCM meetings instituted in FY17 will ensure that sanctioned spending levels are not exceeded without executive approval.

**5 Closeout Activities**

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

(1) All work orders and funding projects have been closed



**USSC Closure Paper**

Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:

- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed.
- construction may cross multiple fiscal years
- the work order closing process is within the late charge waiting period
- other accounting processes or final system closing activities have not yet completed

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

(2) N/A

(3) All lessons learned have been entered appropriately into the lesson learned database

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

**6 Statements of Support**

**6.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibility
Investment Planner	Pensabene, Patrick M.	Endorses relative to 5-year business plan or emergent work
Resource Planning	Vidal, Alfredo	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Wheeler, Bradley	Endorses Resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Endorses Cost Estimate

**USSC Closure Paper**



**6.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

<b>Function</b>	<b>Individual</b>
Finance	Easterly, Patricia
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Eagan, Mark J.

**USSC Closure Paper**



**7 Decisions**

The US Sanctioning Committee (USSC) approved this paper on 3/30/2017.

Signature *Ross W. Turrini* Date April 27, 2017  
Ross Turrini, Senior Vice President, Gas Process and Engineering and  
Chief Gas Engineer



**USSC Closure Paper**

**8 Appendix**

Sanction Paper Number	Original Approved Amount	FP Proj No	FP Proj Descr	Capex	Opex	Removal	Total
USSC-15-232	\$ 8,050,000	CON0029	MANDATED SERVICE & SERVICE CUTOFF	\$10,837	\$0	\$149	\$10,977
		CRCC210	REACT MAIN & SERV WORK NONLEAK-RI	\$3,023	\$0	\$8,340	\$11,353
		CRF1210	REACT MAIN & SERV WORK NONLEAK-RI	\$86,984	\$1,720	\$9,186	\$97,690
		CRF1219	LEAK INVEST REPAIR SERV & MAIN-RI	\$1,033,443	\$0	\$92,600	\$1,106,043
		CRF1309	SERVICE DEMOLITIONS-RI	\$4,128	\$0	\$288,698	\$292,826
		CRF1310	CAPPD ALVE-IR/IR/IR-RI	\$20,220	\$0	\$141,217	\$161,437
		CRFS201	MAIN EXPOS-RI	\$446	\$0	\$0	\$446
		CRFS210	REACT MAIN & SERV WORK NONLEAK-RI	\$845,635	\$0	\$78,129	\$923,664
		CRFS219	LEAK INVEST REPAIR SERV & MAIN-RI	\$5,872,071	\$0	\$676,419	\$6,548,490
		CRFS309	SERVICE DEMOLITIONS-RI	(\$5,271)	\$0	\$126,769	\$121,498
		CRFS310	CAPPD ALVE-IR/IR/IR-RI	\$247,837	\$0	\$740,713	\$988,550
<b>USSC-15-232 Sum</b>				<b>\$8,179,254</b>	<b>\$1,720</b>	<b>\$2,162,211</b>	<b>\$10,343,184</b>

Funding Project Information	
Description	React Main & Serv Work Nonleak-F Funding Proj CRCC210
Company	5360-Narragansett Electric
Bus Segment	RIGASD Last Approved Rev 6
Budget	CRCC210 Status open FP ID 326095543
Department	78105360G - Gas Construct F. P. Type P_Gas Distribution Construction RI
Long Description	Reactive Main & Service Work Non leak
Major Location	MASS PLANT - RI (Gas) Asset Location
Asset Loc Det	
Notes	
Reason	Approval Group <none>
Est Start Date	4/1/2017 Late Charge Wait 0 Months
Est Complete	3/31/2018 In Service Date
Est In Service	3/31/2018 Completion Date
Est Annual Rev	First CPR Month
Initiated By	DIACOM Close Date
Date Suspended	Date Initiated 11/8/2012

Details

Accounts

Contacts

Class Codes

Justification

Tax Status

Authorizations

User Comment

Review

Audits

Delete FP

Cancel FP

Suspend FP

Estimates

Update

Print

Close

Record 1 of 1

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Funding Project Information
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<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-bottom: 1px solid black;">Title <b>React Main &amp; Serv Work Nonleak-RI</b></td> <td style="width: 50%;"></td> </tr> <tr> <td style="border-bottom: 1px solid black;">Funding Project <b>CRCC210</b></td> <td></td> </tr> </table>	Title <b>React Main &amp; Serv Work Nonleak-RI</b>		Funding Project <b>CRCC210</b>		<div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">Details</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">Accounts</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">Contacts</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">Class Codes</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">Justification</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">Tax Status</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">Authorizations</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">User Comment</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">Review</div> <div style="margin-top: 20px; text-align: center;"> <div style="border: 1px solid black; padding: 2px; width: 80%; margin: 0 auto;">Audits</div> <div style="border: 1px solid black; padding: 2px; width: 80%; margin: 2px auto;">Delete FP</div> <div style="border: 1px solid black; padding: 2px; width: 80%; margin: 2px auto;">Cancel FP</div> <div style="border: 1px solid black; padding: 2px; width: 80%; margin: 2px auto;">Suspend FP</div> </div> <div style="margin-top: 20px; text-align: center;"> <div style="border: 1px solid black; padding: 2px; width: 80%; margin: 0 auto;">Estimates</div> <div style="border: 1px solid black; padding: 2px; width: 80%; margin: 2px auto;">Update</div> <div style="border: 1px solid black; padding: 2px; width: 80%; margin: 2px auto;">Print</div> <div style="border: 1px solid black; padding: 2px; width: 80%; margin: 2px auto;">Close</div> </div>
Title <b>React Main &amp; Serv Work Nonleak-RI</b>					
Funding Project <b>CRCC210</b>					

**Class Codes**

Budget Plant Class	Gas Distribution PAM
Send to SE	
<b>Miscellaneous Billing</b>	
Misc Billing Status	
<b>Required</b>	
Force Billing Flag	
RDV Allocation Eligible	
<b>Sanctioning Data</b>	
DOA Amount	
Lower Tolerance	
Strategy Type Name	
Upper Tolerance	

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Record 1 of 1

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Funding Project Information
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**New Approval Type**

**Funding Project**  **Revision**

**Approval Type**  **Amount**

**Status**  **Sent By**  **Date Sent**  **Date Appr**

	Approver	Required	Date Approved	Authority Limit
+ Approver 1 -----	<input type="text" value="Bennett, Thomas E"/>	<input checked="" type="checkbox"/>	7/9/2015	\$1,000,000

**Budget Version**

Rev

Record  of 1



**US Sanction Paper**

<b>Title:</b>	Allens Av Regulator Station Rebuild	<b>Sanction Paper #:</b>	USSC-15-112v2
<b>Project #:</b>	C056104 & C070527	<b>Sanction Type:</b>	Partial Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	8/10/2016
<b>Author:</b>	Kenneth Harber	<b>Sponsor:</b>	John Stavrakas Vice President, Gas Asset Management
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Kenneth Harber

**1 Executive Summary**

**1.1 Sanctioning Summary**

This paper requests partial sanction of C056104 and C070527 in the amount \$4.940M with a tolerance of +/-10% for the purposes of partial installation of phase one of the Allens Av Regulator Station Rebuild project and installation of the Allens Av filter/separator.

*This sanction amount is \$4.940M broken down into:*

*\$ 4.940M Capex*

*\$ 0.000M Opex*

*\$ 0.000M Removal*

NOTE the potential investment of \$10.575M with a tolerance of +/-25%, contingent upon submittal and approval of a Project Sanction paper following completion of final engineering/design for the last two phases of the project.

**1.2 Project Summary**

As a part of the effort by the RI jurisdiction to remove deteriorating buildings as well as clean the contaminated soil within the Allens Av property, the gas mains and regulator stations throughout the property will be consolidated and made safer and more reliable. For the first phase of the project, there are four (4) regulator stations that feed the 99 psig system currently, which will be consolidated and relocated on the property to 3 regulator runs with common inlet and outlet headers in one building. This will also eliminate interconnects between pressure systems that can not be cut out given the current configuration and the separate station feed to NG-LNG. A new filter/separator will be installed on the 200psig pipeline to protect the regulator stations and downstream distribution system from pipeline contaminants and liquids. The second phase of the project will replace the three (3) lower pressure regulator stations on the property and move them into the distribution system, along with associated main



**US Sanction Paper**

reinforcements, to provide better pressure support to the gas system in Providence and eliminate leak-prone pipe. The final phase of the project will abandon the remaining gas mains and regulator stations once the new system configuration has been tested, and will include final clean-up of the surrounding property.

**1.3 Summary of Projects**

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
C056104	N/A	Allens Av Regulator Station Rebuild	9.445
C070527	N/A	Allen Av Filter/Separator	1.130
<b>Total</b>			<b>10.575</b>

**1.4 Associated Projects**

Project Number	Project Title	Estimate Amount (\$M)
C049332	Liquefaction Project at Providence, RI LNG Plant	186.327
<b>Total</b>		<b>186.327</b>

**1.5 Prior Sanctioning History**

Date	Governance Body	Sanctioned Amount	Potential Project Investment	Paper Title	Sanction Type	Tolerance
8/1/2014	DOA	\$0.800M (for engineering and materials purchase)	\$5.200M	N/A	DOA	+/- 10%
4/21/2015	USSC	\$3.600M	\$5.500M	Allens Av Regulator Station Rebuild	Partial	+/- 10%

**1.6 Next Planned Sanction Review**

Date (Month/Year)	Purpose of Sanction Review
February 2017	Partial Sanction (Phase 1 Remainder)



**US Sanction Paper**

**1.7 Category**

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory	National Grid Document ENG01001 – “Design of Gas Regulator Stations – Part 1”
<input checked="" type="radio"/> Policy- Driven	National Grid Document ENG01002 – “Design of Gas Regulator Stations – Part 2”
<input type="radio"/> Justified NPV	
<input type="radio"/> Other	

**1.8 Asset Management Risk Score**

Asset Management Risk Score: 35

**Primary Risk Score Driver: (Policy Driven Projects Only)**

- Reliability       Environment       Health & Safety       Not Policy Driven

**1.9 Complexity Level**

- High Complexity       Medium Complexity       Low Complexity       N/A

Complexity Score: 22

**1.10 Process Hazard Assessment**

A Process Hazard Assessment (PHA) is required for this project:

- Yes       No



**US Sanction Paper**

**1.11 Business Plan**

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY17-FY21 Capital Plan – Gas	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$5.425M

**1.12 If cost is not aligned with approved Business Plan how will this be funded?**

Re-allocation of funds within the portfolio will be managed by Resource Planning to meet jurisdictional budgetary, statutory and regulatory requirements.

**1.13 Current Planning Horizon**

	\$M	Prior Yrs	Current Planning Horizon					Total	
			Yr. 1 2016/17	Yr. 2 2017/18	Yr. 3 2018/19	Yr. 4 2019/20	Yr. 5 2020/21		Yr. 6 + 2021/22
CapEx		1.200	3.740	2.970	2.365	0.050	0.000	0.000	10.325
OpEx		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal		0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250
CIAC/Reimbursement		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total		1.200	3.740	2.970	2.365	0.300	0.000	0.000	10.575

**1.14 Key Milestones**

Milestone	Target Date: (Month/Year)
Initial Sanction (PowerPlan for Engineering)	October 2014
Partial Sanction (Phase 1 Original Scope)	April 2015
Partial Sanction (Phase 1 Initial Portion)	August 2016
Installation of Foundations & Pre-fab Buildings	August 2016
Installation of Filter/Separator	October 2016
Installation of Piping inside of Adjacent Laydown Area	November 2016
Partial Sanction (Phase 1 Remainder)	February 2017
Full Sanction (Phases 2 and 3)	February 2018
Project Closure	April 2020



**US Sanction Paper**

**1.15 Resources, Operations and Procurement**

Resource Sourcing			
Engineering & Design Resources to be provided	<input checked="" type="checkbox"/> Internal	<input checked="" type="checkbox"/> Contractor	
Construction/Implementation Resources to be provided	<input checked="" type="checkbox"/> Internal	<input checked="" type="checkbox"/> Contractor	
Resource Delivery			
Availability of internal resources to deliver project:	<input type="checkbox"/> Red	<input type="checkbox"/> Amber	<input checked="" type="radio"/> Green
Availability of external resources to deliver project:	<input type="checkbox"/> Red	<input type="checkbox"/> Amber	<input checked="" type="radio"/> Green
Operational Impact			
Outage impact on network system:	<input type="checkbox"/> Red	<input type="checkbox"/> Amber	<input checked="" type="radio"/> Green
Procurement Impact			
Procurement impact on network system:	<input type="checkbox"/> Red	<input type="checkbox"/> Amber	<input checked="" type="radio"/> Green

**1.16 Key Issues (include mitigation of Red or Amber Resources)**

1	Coordination of work with ongoing LNG Liquefier project / Kiewit controlled area
2	Environmental concerns working in former MGP site

**1.17 Climate Change**

Contribution to National Grid's 2050 80% emissions reduction target:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive	<input type="radio"/> Negative
Impact on adaptability of network for future climate change:	<input checked="" type="radio"/> Neutral	<input type="radio"/> Positive	<input type="radio"/> Negative

**1.18 List References**

N/A



**US Sanction Paper**

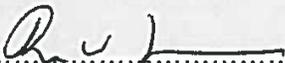
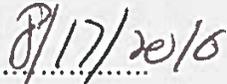
**2 Decisions**

The US Sanctioning Committee (USSC) at a meeting held on 8/10/2016:

(a) APPROVED the investment of \$4.940M and a tolerance of +/-10% for partial installation of phase one of the Allens Av Regulator Station Rebuild project and installation of the Allens Av filter/separator.

(b) NOTED the potential investment of \$10.575M and a tolerance of +/-25%, contingent upon submittal and approval of a Project Sanction paper following completion of final engineering and design.

(c) NOTED that Kenneth Harber has the approved financial delegation to undertake the activities stated in (a).

Signature  ..... Date 

Ross Turrini

Senior Vice President, US Sanctioning Committee Co-Chair Person



**US Sanction Paper**

**3 Sanction Paper Detail**

<b>Title:</b>	Allens Av Regulator Station Rebuild	<b>Sanction Paper #:</b>	USSC-15-112v2
<b>Project #:</b>	C056104 & C070527	<b>Sanction Type:</b>	Partial Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	8/10/2016
<b>Author:</b>	Kenneth Harber	<b>Sponsor:</b>	John Stavrakas Vice President, Gas Asset Management
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Kenneth Harber

**3.1 Background**

The primary location of this project will be at the company-owned facility at 642 Allens Avenue, Providence RI. Phase one will be entirely located on the property. Phase two of the project will be in three (3) areas of the city of Providence. Phase three will also take place at the Allens Avenue property for final clean-up.

There are historically concerns with the configuration of these regulator stations and how the systems are connected and fed in this part of the Rhode Island distribution system. This project will simplify how the regulator stations work, making it safer for the technicians who will maintain these facilities in the future. These regulator stations are significant feeds into the Providence, Johnston, Cranston, Warwick, East Greenwich, and North Kingstown areas. Therefore, for the company's to be able to maintain continued reliability for customers in the region, these regulator stations need to be upgraded to function in a safe and reliable manner.

This project is important for the safety of the public in the nearby distribution area through the reduction of the potential for overpressurization of the system by the inclusion of additional overpressure protection devices. Also, by relocating the three (3) lower pressure regulator stations, National Grid can abandon some large sections of leak-prone pipe and eliminate the related potential for gas leaks. The project also provides greater reliability to the CNG station on the company property. Lastly, this project is one part of the larger effort to improve the appearance of the company property for the neighbors.



## ***US Sanction Paper***

### **3.2 Drivers**

The key driver for the regulator station rebuild project is to remove old regulator station buildings and above-grade piping in the central portion of the 642 Allens Avenue, Providence, RI property. This supports the effort across the entire property to demolish several old buildings no longer in use, and their associated piping.

In addition, the Company has also agreed to replace sections of 200 psig main and other transmission-grade facilities throughout the RI distribution system, which do not have sufficient records. Some sections connected to the existing regulator stations meet this replacement criterion.

### **3.3 Project Description**

To improve the safety and reliability of the Allens Av gas regulator stations, the Company has proposed to:

- Consolidate the existing four (4) regulator stations fed from the 200 psig main into one new building. The replacement of these stations offers an opportunity to add a third layer of overpressure protection to reduce the risk of overpressurization. The new building will also be storm-hardened by establishing it on higher ground. The existing grade of the property is within the 100yr flood zone.
- Install a new filter/separator to protect the downstream distribution system from pipeline contaminants and liquids.
- Move the three (3) regulator stations fed from the 99psig mains further into the distribution system, which provides better pressure support and allows elimination of several thousand feet of leak-prone cast iron main.
- Cut off the piping interconnects and coordinate with Environmental to safely and properly address the contaminated portions of the yard around the existing regulator stations.
- Tie the tail-gas line from the Liquefaction project into the distribution system so that tail gas can mix properly with street gas and feed the required quality of gas to the CNG station at the edge of the property and the distribution system beyond.

### **3.4 Benefits Summary**

Moving the four (4) 200psig to 99psig regulator stations from the current location to a more southern location near the NG-LNG property allows better support for the liquefaction project to tie into the mains in such a way to create a better mix of liquefaction tail gas and street gas for the sake of the neighboring CNG station. In addition this will also allow for the elimination of the separate station that feeds NG-LNG.



## ***US Sanction Paper***

To support both Long Term Planning and Main and Service Replacement, the three (3) lower pressure regulator stations fed from the 99psig system will be moved off of the Allens Av property further into the distribution system. This will provide better pressure support to Providence as well as facilitate the replacement of several thousand feet of leak-prone cast iron pipe.

Lastly, the company has a practice to remove interconnects between different pressure systems for public and employee safety. Some of these valved interconnects exist in the current piping configuration and cannot be removed because there is not enough space to do the work while maintaining a feed to the distribution system. These interconnects will be removed when the gas mains feeding the old regulator stations are cut and capped.

### ***3.5 Business and Customer Issues***

There are no significant business issues beyond what has been described elsewhere.

### ***3.6 Alternatives***

#### **Alternative 1: 200psig Fed Stations Only**

This alternative is less expensive than the proposed project, as the three (3) newer lower pressure regulator stations would remain in place. However, on the property, approximately the same amount of piping work would be required regardless of whether we replace all seven (7) regulator stations or only four (4). Also, the cut and caps would not eliminate the older transmission pressure pipelines as cleanly. Additionally, if the stations feeding the 35psig, 10psig, and 7psig systems are not relocated further into the distribution system, several thousand feet of leak-prone pipe could not be abandoned.

#### **Alternative 2: Leave As Is**

This option is not recommended as the company continues to assume the risk associated with system interconnects, and it does not address the insufficient records identified in the inquiry by the PUC, nor does it address the waning condition of existing equipment.

### ***3.7 Safety, Environmental and Project Planning Issues***

A Health and Safety Plan will be developed and all National Grid Safety and Environmental Rules will be followed.



**US Sanction Paper**

**3.8 Execution Risk Appraisal**

Number	Detailed Description of Risk / Opportunity	Probability	Impact		Score		Strategy	Pre-Trigger Mitigation Plan	Residual Risk	Post Trigger Mitigation Plan
			Cost	Schedule	Cost	Schedule				
1	Unknown subsurface conditions may impact ultimate location of gas main piping	3	3	2	9	6	Mitigate	Conduct survey investigation of proposed area of work	Unknown subsurface conditions remain	Utilize survey information to reroute gas main as needed
2	Coordination with liquefaction project schedule	2	2	5	10	10	Mitigate	Biweekly project coordination meetings	Residual Conflicts Exist	Prioritize work between projects
3	Presence of contaminated soil in excavation	4	2	2	8	8	Mitigate	Detailed environmental contingency plan in place	Environmental contaminants found in excavation	Enact contingency plan and take corrective environmental actions

**3.9 Permitting**

Permit Name	Probability Required (Certain/ Likely/ Unlikely)	Duration To Acquire Permit	Status (Complete/ In Progress Not Applied For)	Estimated Completion Date
Conditional Building Permit	Certain	2-3 months	Complete	Jan 2016
Full Building Permit	Certain	2-3 months	Not Applied For	Dec 2016

**3.10 Investment Recovery**

**3.10.1 Investment Recovery and Regulatory Implications**

Investment recovery will be through standard rate recovery mechanisms approved by appropriate regulatory agencies.



**US Sanction Paper**

**3.10.2 Customer Impact**

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$2.163M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

**3.10.3 CIAC / Reimbursement**

N/A

**3.11 Financial Impact to National Grid**

**3.11.1 Cost Summary Table**

Project Number	Project Title	Project Estimate Level (%)	Spend (\$M)	Prior Yrs	Current Planning Horizon						Total
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
C056104	Allens Av Regulator Station Rebuild	+/-10%	CapEx	1.200	2.610	2.970	2.365	0.050	0.000	0.000	9.195
			OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Removal	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250
			<b>Total</b>	<b>1.200</b>	<b>2.610</b>	<b>2.970</b>	<b>2.365</b>	<b>0.300</b>	<b>0.000</b>	<b>0.000</b>	<b>9.445</b>
C070527	Allens Av Filter/Separator	+/-10%	CapEx	0.000	1.130	0.000	0.000	0.000	0.000	0.000	1.130
			OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			<b>Total</b>	<b>0.000</b>	<b>1.130</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>1.130</b>
<b>Total Project Sanction</b>			CapEx	1.200	3.740	2.970	2.365	0.050	0.000	0.000	10.325
			OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
			Removal	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250
			<b>Total</b>	<b>1.200</b>	<b>3.740</b>	<b>2.970</b>	<b>2.365</b>	<b>0.300</b>	<b>0.000</b>	<b>0.000</b>	<b>10.575</b>

**3.11.2 Project Budget Summary Table**

**Project Costs per Business Plan**

\$M	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	1.200	1.750	1.350	0.850	0.000	0.000	0.000	5.150
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total Cost in Bus. Plan</b>	<b>1.200</b>	<b>1.750</b>	<b>1.350</b>	<b>0.850</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>5.150</b>

**Variance (Business Plan-Project Estimate)**

\$M	Prior Yrs (Actual)	Current Planning Horizon						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
CapEx	0.000	(1.990)	(1.620)	(1.515)	(0.050)	0.000	0.000	(5.175)
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	(0.250)	0.000	0.000	(0.250)
<b>Total Cost in Bus. Plan</b>	<b>0.000</b>	<b>(1.990)</b>	<b>(1.620)</b>	<b>(1.515)</b>	<b>(0.300)</b>	<b>0.000</b>	<b>0.000</b>	<b>(5.425)</b>



**US Sanction Paper**

**3.11.3 Cost Assumptions**

The estimates were developed using internal estimating tools by Gas Systems Engineering in 2016 and through the solicitation of contractor bids by Procurement. The accuracy level of the estimate for each project is identified in table 3.11.1.

**3.11.4 Net Present Value / Cost Benefit Analysis**

**3.11.4.1 NPV Summary Table**

This is not an NPV Project.

**3.11.4.2 NPV Assumptions and Calculations**

N/A

**3.11.5 Additional Impacts**

N/A

**3.12 Statements of Support**

**3.12.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

<b>Department</b>	<b>Individual</b>	<b>Responsibilities</b>
Investment Planner	Pensabene, Patrick M.	Endorses relative to 5-Year Business Plan or Emergent work
Resource Planning	Vidal, Alfredo	Endorses Resources, cost, estimate, schedule, and Portfolio Alignment
Project Management	Michel, Michael	Endorses Resources, cost estimate, schedule
Gas Project Estimation	Paul, Art	Project Estimate



**US Sanction Paper**

**3.12.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

Function	Individual
Finance	Easterly, Patricia
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Iseler, David G.
Procurement	Curran, Art
Control Center	Eagan, Mark J.

**4 Appendices**

**4.1 Sanction Request Breakdown by Project**

\$M	C056104	C070527	Total
CapEx	3.810	1.130	4.940
OpEx			0.000
Removal			0.000
<b>Total</b>	3.810	1.130	4.940

**4.2 Other Appendices**

N/A



**Short Form Sanction Paper**

<b>Title:</b>	FY16 System Reliability – RI	<b>Sanction Paper #:</b>	USSC-15-053
<b>Project #:</b>	CRCC401	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	March 3, 2015
<b>Author:</b>	Adnan Malik	<b>Sponsor:</b>	Timothy F. Small – Vice President, Gas Asset Management
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Thomas Finneral

**1 Executive Summary**

**1.1 Sanctioning Summary**

This paper requests sanction of CRCC401 in the amount \$1.500M with a tolerance of +/- 10% for the purposes of full implementation.

*This sanction amount is \$1.500M broken down into:*  
*\$1.477M Capex*  
*\$0.000M Opex*  
*\$0.023M Removal*

**1.2 Project Summary**

The gas system reliability program is comprised of projects that provide operational benefits to customers beyond those of traditional gas system reinforcement projects, focusing on improving overall system reliability. The overall reliability of a gas distribution system relates its ability to maintain continuous service to existing customers during abnormal operating conditions (e.g., unexpected shutdown of a pipeline facility). Construction of the projects proposed in this program will improve reliability for over 2,500 Rhode Island gas distribution system customers.

**2 Project Detail**

**2.1 Background**

The Long Term Planning reliability projects are identified and developed to improve the overall reliability of the company transmission and distribution systems. The Rhode Island distribution network consists of over fifty (50) independent distribution and feeder systems. Pressure and flow on the system is controlled through a network of cascading feeder and distribution systems fed by eighteen (18) take stations and production facilities and consisting of one hundred ninety eight (198) regulator stations. Reliability is defined in this context as the likelihood or probability of experiencing customer service outages on all or portions of these systems. The distribution network



## **Short Form Sanction Paper**

layout and operation of these systems vary significantly by area. Differences in design practices of legacy companies over many decades have resulted in significant variation in levels of reliability throughout Rhode Island, and the entire US gas distribution service territory. In some cases, expansion of both the customer base and distribution mains has resulted in changes on the system that impact reliability over time (i.e., probability and number of customers at risk increases). Reliability is assessed by reviewing the ability of various operating systems to respond to abnormal operating conditions (e.g., shutdown of pipeline or facility). Gas system reliability concerns include transmission and distribution systems with limited number of feeds (i.e., take stations or regulator stations), systems that are either weakly integrated or consist of long single-feed laterals, networks that contain a wide variety of operating pressures, pressure regulating equipment in areas prone to flooding, and varying design philosophies associated with system and equipment redundancy (e.g., production plants, take stations, regulator stations).

Reliability projects which improve reliability and operation of the distribution system in a cost-efficient manner are identified and proposed for construction. Prospective projects are evaluated for additional system benefits and synergy with other proposed capital projects and often have the added benefit of increasing system capacity and improving operability of the network. In addition, many of these projects also create the opportunity to replace or abandon leak-prone pipe, providing a benefit to the integrity program or be combined with public works activities.

### **2.2 Drivers**

The goal and primary driver of the program is to improve overall system reliability. This year's program improves reliability for at least approximately 2,532 existing customers. The program includes a variety of types of projects that create flexibility in how the system is operated and adaptability for abnormal system operation scenarios.

A major driver in the FY 2015/16 Program looks to improve reliability in operability and maintenance of system regulators under adverse conditions while removing risks of customer outages. One project hopes to integrate a single-feed system into other nearby larger system. There is a significant reliability benefit achieved in reducing the number of isolated systems that exist by connecting them to larger systems. The three (3) major benefits are: first, it creates new connections into distribution systems for better supply into the system; second, it reduces the possibility of customer outages in the event of a regulator abnormal operation issue or third-party damage; and third, in some cases a regulator can be abandoned once the isolated system is connected to the larger distribution system, reducing O&M costs. Another project in the FY2016 reliability program looks to increase reliability by reducing load on a lower pressure system to allow abandonment of pressure-regulating equipment in a flood zone known to be adversely affected during periods of flooding. While not only increasing reliability for the customers to transfer to a higher pressure system, this project looks to decrease inventory of leak-prone pipe.



## **Short Form Sanction Paper**

### **2.3 Project Description**

The gas planning program includes the design, procurement, construction, testing, and completion of capital projects. A full list of the Gas Planning Reliability Program projects for Rhode Island is in Appendix 1. The projects, totaling \$1.500M, are organized by the following work types:

- **Flood Zone Remediation– One (1) Project \$0.39M**  
This is a project addressing pipeline facilities (district regulators) that have experienced flooding and that may impact a substantial number of customers if out of service. The project addresses reliability concerns that occur at the Wood at Woodlawn regulator situated in a flood zone in Bristol, Rhode Island, particularly during periods with large amounts of rainfall. This involves the relay of over 3,000 LF of main, allowing the abandonment of 1,800 LF of “leak-prone” pipe along with the flooding district regulator.
- **Take Station – One (1) Project \$0.47M**  
As part of the AIM project, Spectra will be completing the majority of the work in activating the Crary St Take Station as a supply point into the Rhode Island 99 psig distribution system. However, supplementary work and support would be required by National Grid personnel and engineering that would facilitate the operability of the take station coincidentally with Spectra, including the relay of outlet pipeline of the station to 20in main.
- **Single Feed System Elimination – Two (2) Projects - \$0.62M**  
There are currently over 150 distribution systems fed by a single district regulator across the U.S. distribution system, with 27 in the legacy Rhode Island Company. These two projects improve overall reliability by working towards reducing that number. One project is the second phase of towards eliminating a district regulator by upgrading the downstream distribution system and integrating with the Bristol Warren 8 psig system while another project provides an additional feed into the Warwick 35 psig system (e.g., making a new main connection from an adjacent system with similar MAOP). Ideally, projects that involve a pressure upgrade or uprating are preferred when easily feasible, as system capacity is also improved enabling the addition of new customers without reinforcement.
- **Engineering Costs for Fiscal Year 2017 Projects Placeholder - \$0.02M**  
These costs are for engineering and design of complex projects identified for FY17 construction. The Level 1 estimate was determined by Project Engineering and based on historical data.

### **2.4 Benefits**

In summary, the above mentioned work will improve reliability to over 2,500 customers. The projects work towards the elimination of two (2) single feed district regulators also benefits System Integrity’s risk assessment program and the replacement of 4,116 LF of leak-prone pipe.



**Short Form Sanction Paper**

**2.5 Business & Customer Issues**

There are no significant business issues beyond what has been described elsewhere.

**2.6 Alternatives**

**Alternative 1: Do Nothing/Deferral**

The consequences of not completing the proposed work would result in a failure to take advantage of cost-effective ways to improve distribution system reliability in a proactive manner as discussed above. It could also potentially result in disruption of service for up to approximately 2,532 customers with adverse operation conditions.

**2.7 Investment Recovery**

Investment recovery will be through standard rate recovery mechanisms.

**2.7.1 Customer Impact**

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.310M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

**3 Related Projects, Scoring, Budgets**

**3.1 Summary of Projects**

Project Number	Project Title	Estimate Amount (\$M)
CRCC401	Gas Planning- Reliability-RI	1.500
<b>Total</b>		<b>1.500</b>

**3.2 Associated Projects**

N/A

**3.3 Prior Sanctioning History**

NA



**Short Form Sanction Paper**

**3.4 Category**

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory <input checked="" type="radio"/> Policy- Driven <input type="radio"/> Justified NPV <input type="radio"/> Other	National Grid's goal is to operate a reliable gas distribution system and thus maintain continuous, uninterrupted service to all customers throughout the year.

**3.5 Asset Management Risk Score**

Asset Management Risk Score: 38

Primary Risk Score Driver: (Policy Driven Projects Only)

Reliability     
 Environment     
 Health & Safety     
 Not Policy Driven

**3.6 Complexity Level**

High Complexity     
 Medium Complexity     
 Low Complexity     
 N/A

Complexity Score: 15

**3.7 Next Planned Sanction Review**

Date (Month/Year)	Purpose of Sanction Review
July 2016	Project Closure

**4 Financial**

**4.1 Business Plan**

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY16-FY20 Gas Budget File	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	0.000



**Short Form Sanction Paper**

**4.1.1 If cost > approved Business Plan how will this be funded?**

NA

**4.2 CIAC / Reimbursement**

\$M	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

**4.3 Cost Summary Table**

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total		
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +			
					2015/16	2016/17	2017/18	2018/19	2019/20	2020/21			
CRCC401	Gas Planning- Reliability-RJ	+/- 10%	CapEx	-	1.477	-	-	-	-	-	-	1.477	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	0.023	-	-	-	-	-	-	-	0.023
			Total	-	1.500	-	-	-	-	-	-	-	1.500

**4.4 Project Budget Summary Table**

**Project Costs per Business Plan**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
CapEx	0.000	1.477	0.000	0.000	0.000	0.000	0.000	1.477
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.023	0.000	0.000	0.000	0.000	0.000	0.023
Total Cost in Bus. Plan	0.000	1.500	0.000	0.000	0.000	0.000	0.000	1.500

**Variance (Business Plan-Project Estimate)**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

**5 Key Milestones**

Milestone	Target Date: (Month/Year)
Sanctioning Approval	03/2015
Begin Construction	04/2015
Projects in Service	11/2015
Construction Complete	03/2016
Project Closeout	07/2016



**Short Form Sanction Paper**

**6 Statements of Support**

**6.1.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

<b>Role</b>	<b>Individual</b>	<b>Responsibilities</b>
<i>Investment Planner</i>	Pensabene, Patrick	Endorses relative to 5-year business plan or emergent work.
<i>Resource Planning</i>	Georgacopoulos, Artie	Endorses resources, cost estimate, schedule, and portfolio alignment.
<i>Project Management</i>	Moore, Timothy	Endorses resources, cost estimate, and schedule.

**6.1.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

<b>Reviewer List</b>	<b>Individual</b>
<i>Finance</i>	Fowler, Keith
<i>Finance</i>	Horowitz, Phillip
<i>Regulatory</i>	Zschokke, Peter
<i>Jurisdictional Delegates</i>	Iseler, David G.
<i>Procurement</i>	Curran, Art
<i>Control Center</i>	Eagan, Mark J.

**6.1.3 List References**

1	US Enterprise Wide 5-Year Distribution System Reinforcement & Reliability Plan
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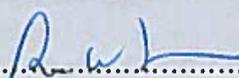
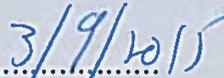
**Short Form Sanction Paper**



**7 Decisions**

I:

- (a) APPROVE this paper and the investment of \$1.500M and a tolerance of +/- 10%
- (b) NOTE that Thomas Finneral is the Project Manager and has the approved financial delegation.

Signature...  ..... Date...  .....

Executive Sponsor – Ross Turrini, Interim Senior Vice President Network Strategy



Short Form Sanction Paper

8 Other Appendices

8.1 Sanction Request Breakdown by Project

Appendix 1 – FY16 Rhode Island Reliability Projects

Work Type	Town	Project Description	Length	Size	Material	MAOP	Estimate Level	Reason for Project
Flood Zone Remediation	Bristol	Due to pressure issues retiring BW007 (Wood @ Woodlawn), in coordination with Water Intrusion relay of Hope St from Ferry to High St, relay of 377ft of 4-in PE, 630ft of 4-in WS LP with 81 ft of 4-in PE 60 psig main in Gtswold Ave from Ferry Rd to EOM, 1,191ft of 4-in PE LP with 2-in PE 60 psig main in Fessier Ave from Gtswold Ave to Captain St, Relay 400ft of 4-in PE LP with 2-in PE 60 psig main in Captain St from Fessier Ave to EOM, Re-pressure test or relay 193ft of 4-in PE LP with 2-in PE 60 psig main in Cross St from Fessier Ave to EOM, Installation of 420ft of 4-in PE 80 psig main in Wood St from Ferry/Hope to existing 2-in PE 60 psig at Wood @ Plant Ave, Transfer (4) LP services on Wood St to Walsey. Relay total of 29 Services. Abandon LP main at Wood @ Walsey and Regulator Station BW007 (Wood @ Woodlawn)	3,015	4", 2"	PL	LP, 60	1	Project improves reliability of distribution system by eliminating a flood-prone LP district regulator RIS-BW007 (Wood @ Woodlawn)
Single Feed Elimination	Bristol	Phase 2 of 3 Gibson LP retirement via relay of 440ft of 6,4-in PE LP with 180ft of 2-in PE 8 psig main in Ledge Rd from Gibson Rd to Forest Rd, 640ft of 4-in PE LP with 553ft of 4-in PE 8 psig main in Mulberry Rd from Sunset Rd to Shore Rd, 780ft of 4-in PE, WS with 4-in PE 8 psig main in Shore Rd from Mulberry Rd to EOM, 500ft of 4-in WS LP with 4-in PE 8 psig main in Clifton Rd from Sunset Rd to EOM, 945ft of 4-in WS LP with 4-in PE 8 psig main in Greylock from Clifton Rd to Crest Rd, 254ft of 4-in WS LP with 4-in PE 8 psig main in Crest Rd from Greylock Rd to Fales Rd, 200ft of 4-in WS LP with 4-in PE 8 psig main in Fales from Crest Rd to EOM.	3,420	4"	PL	LP, 8	1	Project improves reliability of distribution system by eliminating a single-feed district regulator RIS-BW003 (Gibson St)
Single Feed Elimination	East Greenwich	Install 1,160 ft of 4-in PE 35 psig main on Division St from #963 to Sanctuary Dr	1,160	4"	PL	35	1	Project improves reliability of distribution system by eliminating single feed system by integrating RIS-063 (Division St @ Rt 2)
Engineering	Various	Engineering costs associated with 2016 projects					1	Engineering for 2016 projects
Take Station	Providence	Manchester St Gate Station 99# distribution system outlet activation. Relay approx. 100 ft of 12in, 16in CS 99 psig main to 20in CS and two valves. Includes associated engineering and labor work not covered by Spectra.	100	20"	CS	99	1	Project improves reliability by reducing dependency on Providence LNG facility pressure support.



## **Short Form Sanction Paper**

### **Appendix 2 – Outage Restoration Costs**

Estimates for relighting customers and recovering from a system outage have been prepared to quantify the impact of outages related to insufficient system capacity during periods of peak demand and severe winter cold.

Actual relight costs have been captured from recent incidents to quantify company expenses related to restoring service. These were all related to outages that occurred for reasons other than insufficient system capacity and operations were conducted under benign weather conditions. It is likely that during severe winter weather, costs would increase.

Claims related to frozen buildings, burst pipes and equipment damage due to a lack of heat during severe cold weather were captured from the only incident in recent times the company experienced – e.g. the outage in Hull, Ma during the peak day of January 16th, 2004.

#### **Relight Costs**

Tiverton (2008): 900 customer outage with relight costs of \$322,839 for an average relight cost of \$358.71 per customer.

Cutchoque (2003): 1,800 customer outage with relight costs of \$2,367,401 with an average relight cost of \$1,315.22

Glen Cove (2008): 1,016 customer outage with relight costs of \$275,000 for an average relight cost of \$270.67 per customer

Westerly, RI (2011): 1,686 customer outage with relight costs of \$2,811,455 for an average relight cost of \$1,667.53 per customer

Average cost to relight for combined instances above equals \$1069 per customer

#### **Claims**

Hull (2004): 297 customers affected with claims totaling \$206,336 for an average claim of \$694.73 per customer

#### **Combined cost of relight and claims**

The combined cost of relighting customers and resolving claims averages out to \$1,764 per customer.

Recognizing the amount of variability in different incidents such as weather conditions, different types of neighborhoods, variable labor costs, economies of scale, etc., for purposes of evaluating the benefits of reinforcement projects, an average value of service restoration costs and claims of \$1,000 per customer is used.



**USSC Closure Paper**

<b>Title:</b>	FY16 Gas Planning - RI	<b>Sanction Paper #:</b>	USSC-15-053C
<b>Project #:</b>	C033090, C048063, CON0036, CRCC401	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	11/22/2017
<b>Author:</b>	A. Malik	<b>Sponsor:</b>	J. Stavrakas – VP Gas Asset Management
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	W. Mycroft

**1 Executive Summary**

This paper is presented to close C033090, C048063, CON0036, CRCC401. The total spend was \$0.814M. The sanctioned amount for this project was \$1.500M.

*The final spend amount is \$0.814M broken down into:*

- \$0.653M Capex*
- \$0.000M Opex*
- \$0.161M Removal*

**2 Project Summary**

This is the annual sanction closure of the Gas System Reliability Program for Rhode Island. Under this program, projects are completed which focus on improving overall system reliability for a potential of over 2,500 customers impacted if abnormal operating conditions (e.g., unexpected shutdown of a pipeline facility) were to occur. Overall the program was successful and no abnormal system issues arose over 2015-16.



**USSC Closure Paper**

**3 Over / Under Expenditure Analysis**

**3.1 Summary Table**

Actual Spending (\$M)			
Project #	Description		Total Spend
C033090	RI Upratings / Deratings	Capex	(0.007)
		Opex	0.000
		Removal	0.000
		<b>Total</b>	<b>(0.007)</b>
C048063	Canal St Regulator Relocation	Capex	0.004
		Opex	0.000
		Removal	0.000
		<b>Total</b>	<b>0.004</b>
CON0036	RI System Enhancement Blanket	Capex	(0.086)
		Opex	0.000
		Removal	0.003
		<b>Total</b>	<b>(0.083)</b>
CRCC401	Gas Planning - Reliability	Capex	0.742
		Opex	0.000
		Removal	0.158
		<b>Total</b>	<b>0.900</b>
<b>Total</b>		Capex	0.653
		Opex	0.000
		Removal	0.161
		<b>Total</b>	<b>0.814</b>

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	1.477
		Opex	0.000
		Removal	0.023
		<b>Total Cost</b>	<b>1.500</b>
Sanction Variance (\$M)			Total Spend
		Capex	0.824
		Opex	0.000
		Removal	(0.138)
		<b>Total Variance</b>	<b>0.686</b>

**3.2 Analysis**

The total program came in approximately 46% below the sanction approval estimate. The major driver of the total cost variance is that three of the four projects in the original program sanctioning were constructed in FY16. Delays in permitting and coordination with Spectra pipeline operator caused the fourth project not to be completed. In



**USSC Closure Paper**

addition, paving and restoration costs were not incurred on the completed three projects during the fiscal year. Those costs are expected to be incurred in FY17.

**4 Improvements / Lessons Learned**

The costs of construction came in near estimates for completed work, except that paving and restoration was not included in these costs. This implies that the estimation tool utilized was underestimating total costs of jobs. A more stringent review of costs estimates including and excluding paving and restoration costs will be utilized to estimate total costs per fiscal year. In addition, coordination with Construction in order to ensure program projects to be scheduled earlier such that total costs and projects can be completed within the same fiscal year. This is conducted via bi-weekly meetings by Resource Planning to ensure focus on these projects, establish project schedules and milestones, identify and mitigate risks timely, and enable reporting accuracy on progress of projects and the overall program.

**5 Closeout Activities**

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) All work orders and funding projects have been closed  
Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:
- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed .
  - construction may cross multiple fiscal years
  - the work order closing process is within the late charge waiting period



**USSC Closure Paper**

- other accounting processes or final system closing activities have not yet completed

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

(2) All as-builts have been completed

Program/Blanket projects may contain work orders for which no as-builts have yet been recorded for reasons including but not limited to:

- design and/or construction have not yet completed
- construction may cross multiple fiscal years
- work has completed recently and as-builts have not yet been processed into the system
- does not apply. Work order(s) are not linked to work management systems. (example: Meter Purchases, Meter Changes, AMR Installations Purchase Misc Capital Tools/Equipment, etc.)
- does not apply to Information systems projects.

(3) All lessons learned have been entered appropriately into the lesson learned database

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

**6 Statements of Support**

**6.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

<b>Department</b>	<b>Individual</b>	<b>Responsibilities</b>
<i>Investment Planner</i>	Pensabene, Patrick	Endorses relative to 5-year business plan or emergent work.
<i>Resource Planning</i>	Vidal, Alfredo	Endorses resources, cost estimate, schedule, and portfolio alignment.
<i>Project Management</i>	Wheeler, Bradley	Endorses resources, cost estimate, and schedule.
<i>Gas Project Estimation</i>	Paul, Art	Endorses cost estimate

**USSC Closure Paper**



**6.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

<b>Function</b>	<b>Individual</b>
<i>Finance</i>	Easterly, Patricia
<i>Regulatory</i>	Zschokke, Peter
<i>Jurisdictional Delegates</i>	Currie, John
<i>Procurement</i>	Curran, Art
<i>Control Center</i>	Loiacono, Paul J.

**USSC Closure Paper**



**6 Decisions**

I approve this paper.

Signature *Ross W. Turrini*

Date April 27, 2017

Executive Sponsor – Ross Turrini, Senior Vice President, Gas Process & Engineering  
and Chief Gas Engineer

Funding Project Information			
Description	GRS Heater Program-RI	Funding Proj	CRIC214
Company	5360-Narragansett Electric		
Bus Segment	RIGASD	Last Approved Rev	8
Budget	CRIC214	Status	open
Department	78155360G - NE I&R	FP ID	326095568
		F. P. Type	P_Gas Distribution Construction RI
Long Description	GRS Heater Program		
Major Location	MASS PLANT - RI (Gas)	Asset Location	RIG1000 - Burrville - 0641
Asset Loc Det	RIG1000 - Burrville - 0641 - Gas Distribution Mass Accounts		
Notes			
Reason		Approval Group	<none>
Est Start Date	4/1/2017	Late Charge Wait	0 Months
Est Complete	3/31/2018	In Service Date	
Est In Service	3/31/2018	Completion Date	
Est Annual Rev		First CPR Month	
Initiated By	DIACOM	Close Date	
Date Suspended		Date Initiated	11/8/2012

Details

Accounts

Contacts

Class Codes

Justification

Tax Status

Authorizations

User Comment

Review

Audits

Delete FP

Cancel FP

Suspend FP

Estimates

Update

Print

Close

Record 1 of 1

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**Funding Project Information**

Title:   
Funding Project:

**Class Codes**

Budget Plant Class	Gas Distribution PAM
Send to SE	

**Miscellaneous Billing**

Misc Billing Status	
---------------------	--

**Required**

Force Billing Flag	
RDY Allocation Eligible	

**Sanctioning Data**

DOA Amount	
Lower Tolerance	
Strategy Type Name	
Upper Tolerance	

Indicates Display Only - (d) ▾

Record 1 of 1    [K] [ < ] [ > ] [ >I ]

**Details**  
**Accounts**  
**Contacts**  
**Class Codes**  
**Justification**  
**Tax Status**  
**Authorizations**  
**User Comment**  
**Review**

Audits  
Delete FP  
Cancel FP  
Suspend FP

Estimates  
Update  
Print  
Close

Funding Project Information
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**New Approval Type**

**Funding Project**  **Revision**

**Approval Type**  **Amount**

**Status**  **Sent By**  **Date Sent**  **Date Appr**

	Approver	Required	Date Approved	Authority Limit
+ Approver 1 -----	<input type="text" value="Stavrakas, John S"/>	<input checked="" type="checkbox"/>	6/11/2015	\$1,000,000

**Budget Version**

Rev



**Short Form Sanction Paper**

<b>Title:</b>	FY16 Instrumentation & Regulation (I&R) – Reactive Blanket - RI	<b>Sanction Paper #:</b>	USSC-15-212
<b>Project #:</b>	CRIC213	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	March 31, 2015
<b>Author:</b>	John Barrett/Maureen Daly	<b>Sponsor:</b>	Neil Proudman – Vice President , NE Gas Operations
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	John Barrett

**1 Executive Summary**

**1.1 Sanctioning Summary**

This paper requests sanction of CRIC213 in the amount \$1.000M with a tolerance of +/- 10% for the purposes of full implementation.

*This sanction amount is \$1.000M broken down into:*

- \$0.927M Capex*
- \$0.000M Opex*
- \$0.073M Removal*

**1.2 Project Summary**

Pressure regulating facilities have been designed to safely and reliably control system pressures and maintain continuity of supply during periods of normal and peak gas demand. There are 194 pressure regulating facilities in the Rhode Island service territory. The Instrumentation and Regulation (I&R) Reactive Capital Program focuses on capital upgrades/improvements and replacements of pressure regulating facilities throughout the year. This program contributes to the high reliability of the Rhode Island distribution system.

**2 Project Detail**

This program is an annual capital improvement/replacement program. During the course of the year several projects are highlighted by I&R field staff due to equipment



## **Short Form Sanction Paper**

damage and/or unsatisfactory operating issues. Projects mainly include valve replacements, regulator replacements and instrumentation upgrades/replacements.

### **2.1 Background**

This program is an annual capital program. The work plan mainly consists of projects that are highlighted by the various field supervisors over the course of the year. During maintenance inspections crews come across broken doors, broken valves, etc. that need to be replaced as soon as possible. Lightning storms, vehicles hitting traffic boxes, etc. also lead to instrumentation being damaged and in need of immediate replacement.

### **2.2 Project Description**

The I&R Reactive budget is designed to address capital project requirements over and above what the Pressure Regulation Capital budget provides. I&R Reactive projects range from instrumentation replacement due to weather or vehicular damage, replacement of obsolete/unreliable equipment, such as regulators, pilots, boilers, heat exchangers, odorant equipment and replacement of building roofs or doors due to deterioration. There are approximately 194 I&R facilities in Rhode Island that require continuous assessment. In addition to the above mentioned work, valve replacements are also included in this budget.

### **2.3 Benefits**

The reactive regulator program will help to ensure continuous and reliable service to our customers. This program will increase reliability by refurbishing existing stations, and replacing obsolete/unreliable equipment. In many cases capital replacement are required as soon as possible. This budget allows the I&R group to react swiftly to any operational deficiencies.

### **2.4 Business & Customer Issues**

There are no significant business issues beyond what has been described elsewhere

### **2.5 Alternatives**

#### **Alternative 1: Do Nothing/Defer Project**

Doing nothing or deferring this program does not meet our obligation to provide safe and reliable gas service, nor the longer term objective of improving the operation and performance of the pressure regulating stations. The consequences of not completing the work scheduled will result in increased risks associated with the failure of station equipment, and/or the stations associated piping. Specifically,



**Short Form Sanction Paper**

failure to complete identified work would reduce the integrity of the system and potentially result in significant customer outages.

**2.6 Investment Recovery**

Investment recovery will be through standard rate recovery mechanisms.

**2.6.1 Customer Impact**

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.195M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

**3 Related Projects, Scoring, Budgets**

**3.1 Summary of Projects**

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRIC213		I&R - Reactive Program - RI	1.000
<b>Total</b>			<b>1.000</b>

**3.2 Associated Projects**

N/A

**3.3 Prior Sanctioning History**

N/A

**3.4 Category**

Category	Reference to Mandate, Policy, NPV, or Other
----------	---



**Short Form Sanction Paper**

<input type="radio"/> Mandatory <input checked="" type="radio"/> Policy- Driven <input type="radio"/> Justified NPV <input type="radio"/> Other	National Grid Document ENG01001 – “Design of Gas Regulator Stations – Part 1”  National Grid Document ENG01002 – “Design of Gas Regulator Stations – Part 2”
--	--

**3.5 Asset Management Risk Score**

Asset Management Risk Score: 40

**Primary Risk Score Driver: (Policy Driven Projects Only)**

- Reliability     
 Environment     
 Health & Safety     
 Not Policy Driven

**3.6 Complexity Level**

- High Complexity     
 Medium Complexity     
 Low Complexity     
 N/A

Complexity Score: 15

**3.7 Next Planned Sanction Review**

Date (Month/Year)	Purpose of Sanction Review
June 2016	Project Closure

**4 Financial**

**4.1 Business Plan**



**Short Form Sanction Paper**

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY16-FY20 Gas-Budget File	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000

**4.1.1 If cost > approved Business Plan how will this be funded?**

N/A

**4.2 CIAC / Reimbursement**

\$M	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+	Total
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

**4.3 Cost Summary Table**

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+	
					2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
CRIC213	I&R - Reactive Program - RI	Est Lvl (e.g. +/- 10%)	CapEx	-	0.927	-	-	-	-	-	0.927
			OpEx	-	-	-	-	-	-	-	-
			Removal	-	0.073	-	-	-	-	-	0.073
			Total	-	1.000	-	-	-	-	-	1.000
Total Project Sanction			CapEx	-	0.927	-	-	-	-	-	0.927
			OpEx	-	-	-	-	-	-	-	
			Removal	-	0.073	-	-	-	-	-	0.073
			Total	-	1.000	-	-	-	-	-	1.000

**4.4 Project Budget Summary Table**

**Project Costs Per Business Plan**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6+	
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
CapEx	0.000	0.927	0.000	0.000	0.000	0.000	0.000	0.927
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.073	0.000	0.000	0.000	0.000	0.000	0.073
Total Cost in Bus. Plan	0.000	1.000	0.000	0.000	0.000	0.000	0.000	1.000

**Variance (Business Plan-Project Estimate)**



**Short Form Sanction Paper**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2015/16	Yr. 2 2016/17	Yr. 3 2017/18	Yr. 4 2018/19	Yr. 5 2019/20	Yr. 6+ 2020/21	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

**5 Key Milestones**

Milestone	Target Date: (Month/Year)
Sanction Approval	March 2015
Delivery of Materials	April 2015
Start Construction	April 2015
Completion Construction	December 2015
Project Closure	June 2016

**6 Statements of Support**

**6.1.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

Role	Individual	Responsibilities
<i>Investment Planner</i>	Pensabene, Patrick M.	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Georgacopoulos, Artie	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
Project Management	Moore, Timothy	Endorses Resources, cost estimate, schedule

**6.1.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

Reviewer List	Individual
Finance	Fowler, Keith Horowitz, Philip
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Iseler, David G.
Procurement	Curran, Art
Control Center	Eagan, Mark J.

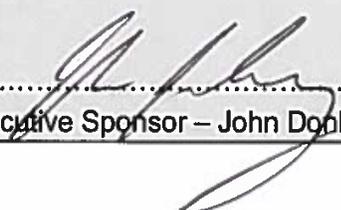


**Short Form Sanction Paper**

**7 Decisions**

I:

- (a) APPROVE this paper and the investment of \$1.000M and a tolerance of +/-10%
- (b) NOTE that John Barrett is the Project Manager and has the approved financial delegation.
- (c) NOTE: In the event that any Blanket/Program projects are not approved prior to the start of the FY2017 fiscal year, the FY2016 approval limits will remain in effect until such time as the FY2017 blanket/program projects are approved by USSC and/or other appropriate authority for approval.

Signature..........Date.....4/15/15.....

Executive Sponsor – John Donleavy, EVP and Chief Operating Officer



***Short Form Sanction Paper***

**8 *Other Appendices***

**8.1 *Sanction Request Breakdown by Project***

N/A



**USSC Closure Paper**

<b>Title:</b>	FY16 Instrumentation & Regulation (I&R) – Reactive Blanket - RI	<b>Sanction Paper #:</b>	USSC-15-212C
<b>Project #:</b>	CRIC213	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	11/29/2016
<b>Author:</b>	John Barrett/Maureen Daly	<b>Sponsor:</b>	Neil Proudman – Vice President , NE Gas Operations
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	John Barrett

**1 Executive Summary**

This paper is presented to close CRIC213. The total spend was \$1.104M. The latest amount for this project was \$1.000M.

*The final spend amount is \$1.104M broken down into:*

- \$1.083M Capex*
- \$0.000M Opex*
- \$0.021M Removal*

**2 Project Summary**

Pressure regulating facilities have been designed to safely and reliably control system pressures and maintain continuity of supply during periods of normal and peak gas demand. There are 194 pressure regulating facilities in the Rhode Island service territory. The Instrumentation and Regulation (I&R) Reactive Capital Blanket focuses on capital upgrades/improvements and replacements of pressure regulating facilities throughout the year. This blanket contributes to the high reliability of the Rhode Island distribution system.



**USSC Closure Paper**

**3 Over / Under Expenditure Analysis**

**3.1 Summary Table**

Actual Spending (\$M)			
Project #	Description		Total Spend
CBIC213	FY16 Instrumentation & Regulation (I&R)-Reactive Blanket - RI	Capex	1.083
		Opex	0.000
		Removal	0.021
		<b>Total</b>	<b>1.104</b>
<b>Total</b>		Capex	1.083
		Opex	0.000
		Removal	0.021
		<b>Total</b>	<b>1.104</b>

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	0.927
		Opex	0.000
		Removal	0.073
		<b>Total Cost</b>	<b>1.000</b>
Sanction Variance (\$M)			Total Spend
		Capex	(0.156)
		Opex	0.000
		Removal	0.052
		<b>Total Variance</b>	<b>(0.104)</b>

**3.2 Analysis**

This blanket is an annual capital improvement/replacement program for pressure regulating facilities, which includes valve replacements, regulator replacements and instrumentation upgrades/replacements. During the course of the fiscal year, I&R field staff identify equipment that should be improved or replaced due to damage and/or unsatisfactory operating issues. Starting in FY16, the Company reassigned the funding of valve replacements at regulator stations from the engineering budget to the I&R Reactive funding project. Since the capital budget for this program was originally derived by historical and estimated spending, adding valve replacements caused an unanticipated increase in costs for this blanket.



**USSC Closure Paper**

**4 Improvements / Lessons Learned**

The Instrumentation & Regulation group is now working more closely with Pressure Regulation Engineering among other groups to track the money being spent and to improve project forecasts.

**5 Closeout Activities**

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) All work orders and funding projects have been closed  
Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:
- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed.
  - construction may cross multiple fiscal years
  - the work order closing process is within the late charge waiting period
  - other accounting processes or final system closing activities have not yet completed

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

**USSC Closure Paper**



(2) All as-builts have been completed

Program/Blanket projects may contain work orders for which no as-builts have yet been recorded for reasons including but not limited to:

- design and/or construction have not yet completed
- construction may cross multiple fiscal years
- work has completed recently and as-builts have not yet been processed into the system
- does not apply. Work order(s) are not linked to work management systems. (example: Meter Purchases, Meter Changes, AMR Installations Purchase Misc Capital Tools/Equipment, etc.)
- does not apply to Information systems projects.

(3) All lessons learned have been entered appropriately into the lesson learned database

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

**6 Statements of Support**

**6.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

<b>Department</b>	<b>Individual</b>	<b>Responsibilities</b>
<i>Investment Planner</i>	Pensabene, Patrick M	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Vidal, Alfredo	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
<i>Project Management</i>	Michel, Michael	Endorses Resources, cost estimate, schedule
<i>Gas Project Estimation</i>	Paul, Art	Endorses Cost Estimate

**USSC Closure Paper**



**6.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

<b>Function</b>	<b>Individual</b>
Finance	Easterly, Patricia
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul

**USSC Closure Paper**



**7 Decisions**

I approve this paper.

Signature *Ross W. Turrini* Date April 27, 2017

Executive Sponsor – Ross Turrini, Senior Vice President, Gas Process & Engineering  
and Chief Gas Engineer

Funding Project Information			
Description	LNG - Cumberland LNG	Funding Proj	CRLC406
Company	5360-Narragansett Electric		
Bus Segment	RIGASD	Last Approved Rev	7
Budget	CRLC406	Status	open
		FP ID	326095572
Department	61505360G - LNG Operatio	F. P. Type	P_Gas Distribution Construction RI
Long Description	LNG - Cumberland LNG		
Major Location	MASS PLANT - RI (Gas)	Asset Location	
Asset Loc Det			
Notes			
Reason		Approval Group	<none>
Est Start Date	4/1/2017	Late Charge Wait	0 Months
Est Complete	3/31/2018	In Service Date	
Est In Service	3/31/2018	Completion Date	
Est Annual Rev		First CPR Month	
Initiated By	DIACOM	Close Date	
Date Suspended		Date Initiated	11/8/2012

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Tax Status

Authorizations

User Comment

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Audits

Delete FP

Cancel FP

Suspend FP

Estimates

Update

Print

Close

Record 1 of 1    < > >>

**Funding Project Information**

Title: LNG - Cumberland LNG  
Funding Project: CRLC406

**Class Codes**

Budget Plant Class	Gas Distribution PAM
Send to SE	
<b>Miscellaneous Billing</b>	
Misc Billing Status	
<b>Required</b>	
Force Billing Flag	
RDV Allocation Eligible	
<b>Sanctioning Data</b>	
DOA Amount	
Lower Tolerance	.90
Strategy Type Name	
Upper Tolerance	1.10

Indicates Display Only - (d)

Details  
Accounts  
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Cancel FP  
Suspend FP

Estimates  
Update  
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Close

Record 1 of 1

Funding Project Information
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**New Approval Type**

**Funding Project**  **Revision**

**Approval Type**  **Amount**

**Status**  **Sent By**  **Date Sent**  **Date Appr**

	Approver	Required	Date Approved	Authority Limit
+ Approver 1 -----	<input type="text" value="Su, Fikret"/>	<input checked="" type="checkbox"/>	6/23/2015	\$1,000,000

**Budget Version**

Rev

Record  of 1

Funding Project Information		Details	
Description	LNG - Exeter LNG	Funding Proj	CRLC407
Company	5360-Narragansett Electric		
Bus Segment	RIGASD	Last Approved Rev	6
Budget	CRLC407	Status	open
Department	61505360G - LNG Operatio	F. P. Type	P_Gas Distribution Construction RI
		FP ID	326095573
Long Description	LNG - Exeter LNG		
Major Location	MASS PLANT - RI (Gas)	Asset Location	
Asset Loc Det			
Notes			
Reason		Approval Group	<none>
Est Start Date	4/1/2017	Late Charge Wait	0 Months
Est Complete	3/31/2018	In Service Date	
Est In Service	3/31/2018	Completion Date	
Est Annual Rev		First CPR Month	
Initiated By	DIACOM	Close Date	
Date Suspended		Date Initiated	11/8/2012

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Record 1 of 1    < < > >

Funding Project Information
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<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 2px;">Title <input style="width: 95%;" type="text" value="LNG - Exeter LNG"/></td> <td style="width: 50%;"></td> </tr> <tr> <td style="padding: 2px;">Funding Project <input style="width: 95%;" type="text" value="CRLC407"/></td> <td></td> </tr> </table>	Title <input style="width: 95%;" type="text" value="LNG - Exeter LNG"/>		Funding Project <input style="width: 95%;" type="text" value="CRLC407"/>		<div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Details</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Accounts</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Contacts</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Class Codes</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Justification</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Tax Status</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Authorizations</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">User Comment</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Review</div> <div style="margin-top: 10px; text-align: center;"> <div style="border: 1px solid gray; padding: 2px; width: 80%; margin: 0 auto;">Audits</div> <div style="border: 1px solid gray; padding: 2px; width: 80%; margin: 2px auto;">Delete FP</div> <div style="border: 1px solid gray; padding: 2px; width: 80%; margin: 2px auto;">Cancel FP</div> <div style="border: 1px solid gray; padding: 2px; width: 80%; margin: 2px auto;">Suspend FP</div> </div> <div style="margin-top: 10px; text-align: center;"> <div style="border: 1px solid gray; padding: 2px; width: 80%; margin: 0 auto;">Estimates</div> <div style="border: 1px solid gray; padding: 2px; width: 80%; margin: 2px auto;">Update</div> <div style="border: 1px solid gray; padding: 2px; width: 80%; margin: 2px auto;">Print</div> <div style="border: 1px solid gray; padding: 2px; width: 80%; margin: 2px auto;">Close</div> </div>
Title <input style="width: 95%;" type="text" value="LNG - Exeter LNG"/>					
Funding Project <input style="width: 95%;" type="text" value="CRLC407"/>					

**Class Codes**

<b>Budget Plant Class</b>	<b>Gas Distribution PAM</b>
Send to SE	
<b>Miscellaneous Billing</b>	
Misc Billing Status	
<b>Required</b>	
Force Billing Flag	
RDV Allocation Eligible	
<b>Sanctioning Data</b>	
DOA Amount	
Lower Tolerance	.90
Strategy Type Name	
Upper Tolerance	1.10

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Funding Project Information
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**New Approval Type**

**Funding Project**  **Revision**

**Approval Type**  **Amount**

**Status**  **Sent By**  **Date Sent**  **Date Appr**

	Approver	Required	Date Approved	Authority Limit
+ Approver 1 -----	<input type="text" value="Su, Fikret"/>	<input checked="" type="checkbox"/>	6/23/2015	\$1,000,000

**Budget Version**

Rev

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**Details**

**Accounts**

**Contacts**

**Class Codes**

**Justification**

**Tax Status**

**Authorizations**

**User Comment**

**Review**



**Short Form Sanction Paper**

<b>Title:</b>	FY16 Pressure Regulating Facilities Proactive – RI	<b>Sanction Paper #:</b>	USSC-15-058
<b>Project #:</b>	CRIC402	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	March 3, 2015
<b>Author:</b>	Alexander Day	<b>Sponsor:</b>	Timothy F. Small – Vice President, Gas Asset Management
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Stephen Greco

**1 Executive Summary**

**1.1 Sanctioning Summary**

This paper requests sanction of CRIC402 in the amount \$1.480M with a tolerance of +/- 10% for the purposes of full implementation.

*This sanction amount is \$1.480M broken down into:*

- \$1.459M Capex*
- \$0.000M Opex*
- \$0.021M Removal*

**1.2 Project Summary**

Pressure regulating facilities have been designed to safely and reliably control system pressures and maintain continuity of supply during periods of normal and peak gas demand. There are 194 facilities in the Rhode Island service territory. The Proactive Regulator Program focuses on capital upgrades/improvements and new installations of pressure regulating stations.

**2 Project Detail**

**2.1 Background**

This program is an annual capital improvement program. In order to determine the work plan, all 194 stations have been inspected and risk ranked once every three (3) years. Using data from the annual Performance Testing (PT), Cathodic Protection (CP) testing, risk assessments and on-site inspections; technical assessments were made for each pressure regulating station taking into account: pipe and equipment condition, operating pressure, regulator performance, and corrosion data. This information combined with the potential customer impact resulting from a station outage was used to prioritize and schedule projects within the Capital Improvement Plan in accordance with the National Grid Distribution Integrity Management Plan (DIMP).



## **Short Form Sanction Paper**

### **2.2 Drivers**

Key Drivers are asset condition and reliability.

### **2.3 Project Description**

The Proactive Regulator Program for FY16 includes the following work:

Station RIS-001 is located at Veterans Memorial Pkwy and Service Rd in East Providence, RI. This station was built in 1994, and has two-stage regulation (monitor and control) where each device is contained within its own vault. The inlet MAOP is 200 PSIG and the outlet system is 25 PSIG. Peak flow through the station is 238.5 MSCFH. Loss of this station could potentially impact approximately 5,312 customers based on average residential usage. The piping and equipment are outdated. The vault is located in a flood plain and commonly takes on water. This station will be replaced with a standard prefabricated regulator station with three layers of protection (housed in individual vaults), redundant runs, and up-to-date telemetry.

Station RIS-008 is located at Brook St and George St in Providence, RI. This station was built in 1978, and has two-stage regulation (monitor and control) where each device is contained within its own vault. The inlet MAOP is 99 PSIG and the outlet system is Low Pressure. Peak flow through the station is 72.9 MSCFH. Loss of this station could potentially impact approximately 1,624 customers based on average residential usage. The piping and equipment are outdated. The vault penetrations are in poor condition. This station will be replaced with a standard prefabricated regulator station with dual vaults, redundant runs, and up-to-date telemetry.

Station RIS-105 is located at Brook St and George St in Providence, RI. This station was built in 1984, and has two-stage regulation (monitor and control) where each device is contained within its own vault. The inlet MAOP is 99 PSIG and the outlet system is 35 PSIG. Peak flow through the station is 119.7 MSCFH. Loss of this station could potentially impact approximately 2,666 customers based on average residential usage. The piping and equipment are outdated. The vault penetrations are in poor condition. This station will be replaced with a standard prefabricated regulator station with dual vaults, redundant runs, and up-to-date telemetry.

Station RIN-C047 is located at 4425 Diamond Hill Rd in Cumberland, RI. This take station was built in 1990, and has dual runs of two-stage regulation (working monitor and control) with working monitor devices inside a building and control devices in a separate vault. The inlet MAOP is 750 PSIG and the outlet system is 60 PSIG. Peak flow through the station is 48.0 MSCFH. Loss of this station could potentially impact approximately 1,069 customers based on average residential usage. The work at this station entails replacing the existing plastic sense lines with new steel.



**Short Form Sanction Paper**

**2.4 Benefits**

The proactive regulator program will help to ensure continuous and reliable service to our customers. This program will increase reliability by installing new stations, refurbishing existing stations, and replacing obsolete equipment.

**2.5 Business & Customer Issues**

There are no significant business issues beyond what has been described elsewhere.

**2.6 Alternatives**

**Alternative 1: Do Nothing/Defer Project**

Doing nothing or deferring this program does not meet our obligation to provide safe and reliable gas service, nor the longer term objective of improving the operation and performance of the pressure regulating stations. The consequences of not completing the work scheduled will result in increased risks associated with the failure of station equipment, and/or the stations associated piping. Specifically, failure to complete identified work would reduce the integrity of the system and potentially result in significant customer outages.

**2.7 Investment Recovery**

Investment recovery will be through standard rate recovery mechanisms.

**2.7.1 Customer Impact**

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.306M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

**3 Related Projects, Scoring, Budgets**

**3.1 Summary of Projects**

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRIC402		Pressure Regulating Facilities - Proactive	1.480
<b>Total</b>			<b>1.480</b>

**3.2 Associated Projects**

N/A



**Short Form Sanction Paper**

**3.3 Prior Sanctioning History**

N/A

**3.4 Category**

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory	
<input checked="" type="radio"/> Policy- Driven	National Grid Document ENG01001 – “Design of Gas Regulator Stations – Part 1”
<input type="radio"/> Justified NPV	National Grid Document ENG01002 – “Design of Gas Regulator Stations – Part 2”
<input type="radio"/> Other	

**3.5 Asset Management Risk Score**

Asset Management Risk Score: 34

Primary Risk Score Driver: (Policy Driven Projects Only)

Reliability       Environment       Health & Safety       Not Policy Driven

**3.6 Complexity Level**

High Complexity       Medium Complexity       Low Complexity       N/A

Complexity Score: 15



**Short Form Sanction Paper**

**3.7 Next Planned Sanction Review**

Date (Month/Year)	Purpose of Sanction Review
June 2016	Closure Paper

**4 Financial**

**4.1 Business Plan**

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY16-FY20 Gas-Budget File	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000

**4.1.1 If cost > approved Business Plan how will this be funded?**

N/A

**4.2 CIAC / Reimbursement**

\$M	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

**4.3 Cost Summary Table**

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total		
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +			
					2015/16	2016/17	2017/18	2018/19	2019/20	2020/21			
CRIC402	Pressure Regulating Facilities - Proactive	Est Lvl (e.g. +/- 10%)	CapEx	-	1,459	-	-	-	-	-	-	1,459	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	0,021	-	-	-	-	-	-	-	0,021
			Total	-	1,480	-	-	-	-	-	-	-	1,480
Total Project Sanction			CapEx	-	1,459	-	-	-	-	-	-	1,459	
			OpEx	-	-	-	-	-	-	-	-	-	
			Removal	-	0,021	-	-	-	-	-	-	0,021	
			Total	-	1,480	-	-	-	-	-	-	1,480	



**Short Form Sanction Paper**

**4.4 Project Budget Summary Table**

**Project Costs per Business Plan**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2015/16	Yr. 2 2016/17	Yr. 3 2017/18	Yr. 4 2018/19	Yr. 5 2019/20	Yr. 6 + 2020/21	
CapEx	0.000	1.459	0.000	0.000	0.000	0.000	0.000	1.459
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.021	0.000	0.000	0.000	0.000	0.000	0.021
<b>Total Cost in Bus. Plan</b>	<b>0.000</b>	<b>1.480</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>1.480</b>

**Variance (Business Plan-Project Estimate)**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2015/16	Yr. 2 2016/17	Yr. 3 2017/18	Yr. 4 2018/19	Yr. 5 2019/20	Yr. 6 + 2020/21	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total Cost in Bus. Plan</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

**5 Key Milestones**

Milestone	Target Date: (Month/Year)
Approval	March 2015
Delivery of Materials	April 2015
Start Construction	April 2015
Complete Construction	December 2015
Project Closure	June 2016



**Short Form Sanction Paper**

**6 Statements of Support**

**6.1.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

<b>Role</b>	<b>Individual</b>	<b>Responsibilities</b>
<i>Investment Planning</i>	Pensabene, Patrick M.	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Georgacopoulos, Artie	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
<i>Project Management</i>	Moore, Timothy	Endorses Resources, cost estimate, schedule

**6.1.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

<b>Reviewer List</b>	<b>Individual</b>
Finance	Fowler, Keith
	Horowitz, Philip
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Iseler, David G.
Procurement	Curran, Art
Control Center	Eagan, Mark J.



**Short Form Sanction Paper**

**7 Decisions**

I:

(a) APPROVE this paper and the investment of \$1.480M and a tolerance of +/-10%

(b) NOTE that Stephen Greco is the Project Manager and has the approved financial delegation.

Signature Ross W. Turrini Date 3/9/2015  
Executive Sponsor – Ross W. Turrini, Acting Senior VP, Network Strategy



**Short Form Sanction Paper**

**8 Other Appendices**

Station	Scope of Work	Estimate
RIS-001 Bentley St 25 PSIG, East Providence	Prefab Installation	\$525,000
RIS-008 Brook @ George LP, Providence	Prefab Installation. Carryover from FY14/15	\$400,000
RIS-105 Brook @ George 35 PSIG, Providence	Prefab Installation. Carryover from FY14/15	\$400,000
RIN-C047 Diamond Hill Rd GS, Cumberland	Gate Station Upgrades	\$75,000
Various locations	Design services & permitting for FY16/17	\$80,000
	<b>Total</b>	<b>\$1,480,000</b>

**8.1 Sanction Request Breakdown by Project**

N/A

**USSC Closure Paper**



<b>Title:</b>	FY16 Pressure Regulating Facilities Proactive – RI	<b>Sanction Paper #:</b>	USSC-15-058C
<b>Project #:</b>	CRIC402, C070527, CON0038	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	11/08/2016
<b>Author:</b>	Anthony DellaCamera	<b>Sponsor:</b>	John Stavrakas – Vice President, Gas Asset Management
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Stephen Greco

**1 Executive Summary**

This paper is presented to close CRIC402, C070527, CON0038. The total spend was \$2.775M. The sanctioned amount for this project was \$1.480M.

*The final spend amount is \$2.775M broken down into:*

- \$2.587M Capex*
- \$0.000M Opex*
- \$0.188M Removal*

**2 Project Summary**

Pressure regulating facilities have been designed to safely and reliably control system pressures and maintain continuity of supply during periods of normal and peak gas demand. There are 194 facilities in the Rhode Island service territory. The Proactive Regulator Program focuses on capital upgrades/improvements and new installations of pressure regulating stations.



**USSC Closure Paper**

**3 Over / Under Expenditure Analysis**

**3.1 Summary Table**

Actual Spending (\$M)			
Project #	Description		Total Spend
C070527	RI OIL MITIGATION MEASURES	Capex	0.079
		Opex	0.000
		Removal	0.000
		<b>Total</b>	<b>0.079</b>
CON0038	RI-GAS-REGLTR STAT REPL-RI BLANKET	Capex	(0.032)
		Opex	0.000
		Removal	0.000
		<b>Total</b>	<b>(0.032)</b>
CRIC402	PRES REG FACIL - PROACTIVE RI	Capex	2.540
		Opex	0.000
		Removal	0.187
		<b>Total</b>	<b>2.727</b>
<b>Total</b>		Capex	2.587
		Opex	0.000
		Removal	0.188
		<b>Total</b>	<b>2.775</b>

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	1.459
		Opex	0.000
		Removal	0.021
		<b>Total Cost</b>	<b>1.480</b>
Sanction Variance (\$M)			Total Spend
		Capex	(1.128)
		Opex	0.000
		Removal	(0.167)
		<b>Total Variance</b>	<b>(1.295)</b>



**USSC Closure Paper**

**3.2 Analysis**

The RI Proactive Pressure Regulating Facilities overspent its budget in fiscal year 2015-2016. The overspend was due to major field scope changes on certain projects combined with an estimation methodology that contributed to an understated budget.

**4 Improvements / Lessons Learned**

Pressure Regulation Engineering is now working closely with Resource Planning and Project Management among other groups to track the money being spent and to improve project forecasts. Committees and meetings have also been set up to proactively manage the entire capital budget. There are monthly Zero Variance and Portfolio Calibration Meetings to review the spend forecast for the fiscal year and adjust it to align with the budget. Additionally, when the new Gas Project Estimating Group is fully functional they will be used to provide more accurate estimates and forecasts.

**5 Closeout Activities**

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

(1) All work orders and funding projects have been closed  
Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:

- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed .
- construction may cross multiple fiscal years

**USSC Closure Paper**



- the work order closing process is within the late charge waiting period
- other accounting processes or final system closing activities have not yet completed

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

(2) All as-builts have been completed

Program/Blanket projects may contain work orders for which no as-builts have yet been recorded for reasons including but not limited to:

- design and/or construction have not yet completed
- construction may cross multiple fiscal years
- work has completed recently and as-builts have not yet been processed into the system
- does not apply. Work order(s) are not linked to work management systems. (example: Meter Purchases, Meter Changes, AMR Installations Purchase Misc Capital Tools/Equipment, etc.)
- does not apply to Information systems projects.

(3) All lessons learned have been entered appropriately into the lesson learned database

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

**6 Statements of Support**

**6.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

<b>Department</b>	<b>Individual</b>	<b>Responsibilities</b>
<i>Investment Planner</i>	Pensabene, Patrick M	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Vidal, Alfredo	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
<i>Project Management</i>	Michel, Michael	Endorses Resources, cost estimate, schedule

**USSC Closure Paper**



<i>Gas Project Estimation</i>	Paul, Art	Endorses Cost Estimate
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**6.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

<b>Function</b>	<b>Individual</b>
Finance	Easterly, Patricia
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul

**USSC Closure Paper**



**7 Decisions**

I approve this paper.

Signature *Ross W. Turrini*

Date April 27, 2017

Executive Sponsor – Ross Turrini, Senior Vice President, Gas Process & Engineering  
and Chief Gas Engineer



**Short Form Sanction Paper**

<b>Title:</b>	FY16 - System Automation and Control – RI	<b>Sanction Paper #:</b>	USSC-15-056
<b>Project #:</b>	CRGC403	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	March 3, 2015
<b>Author:</b>	Melina Diaconis	<b>Sponsor:</b>	Timothy F. Small – Vice President, Gas Asset Management
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Stephen Greco

**1 Executive Summary**

**1.1 Sanctioning Summary**

This paper requests the sanction of CRGC403 in the amount of \$1.000M with a tolerance of +/- 10% for the purpose of full implementation.

*This sanction amount is \$1.000M broken down into:*

- \$1.000M Capex*
- \$0.000M Opex*
- \$0.000M Removal*

**1.2 Project Summary**

The primary purpose of this program is to increase the level of system automation by monitoring and controlling gas pressure, temperature and flow rate at gas regulator stations. The aim is to address 20-25 stations in this fiscal year. Over the next 4-5 years, the program will target the remaining 85 sites without system automation.

**2 Project Detail**

**2.1 Background**

The company objective at take stations and regulator stations is to standardize operations, maintain custody check metering, and increase control and monitoring. This program is policy driven and will increase the overall reliability and integrity of the gas system. Delivering the program supports the Narragansett Electric Company rate case. Program delivery also serves to increase operational understanding of the system to identify abnormal operating conditions and to facilitate a proactive approach to alarm management. It improves our employees' ability to operate and maintain the system by



## **Short Form Sanction Paper**

allowing Gas Control and Field Operations to respond to the system operation conditions as they occur.

### **2.2 Drivers**

The system automation program supports the Pipeline and Hazardous Materials Safety Administration (PHMSA) requirement that "each operator must provide its controllers with the information, tools, processes and procedures necessary for the controllers to carry out the roles and responsibilities the operator has defined."

### **2.3 Project Description**

This project will install Remote Terminal Units (RTU's) at multiple pressure regulator stations located throughout the Narragansett Electric Company service territory. RTU's are installed locally at the pressure regulating facilities and transmit temperature, pressure, and flow data via cellular or lease-line technology back to the Gas Control Room. In some cases the RTU's can also monitor other sensors such as gas detectors, and intrusion alarms. In addition, controllers are strategically installed on the regulator runs of some stations in order to provide the Gas Control Room with remote operating capabilities.

### **2.4 Benefits**

Data provided by the RTU's will allow Gas Control to respond to current system operating conditions, efficiently alert field personnel when required and remotely adjust the pressure set point at the regulator stations when necessary.

### **2.5 Business & Customer Issues**

Installing automation equipment allows gas control to monitor system performance proactively and address issues before they impact customers.

### **2.6 Alternatives**

#### **Alternative 1: Defer Project**

Deferring the project does not meet the long term company objective to actively manage system pressures and leak activity. Also this alternative will leave approximately 50% of this region without remote monitoring and control. Not having the capability to monitor system pressure in real time increases risk to the gas system and our customers.



**Short Form Sanction Paper**

**2.7 Investment Recovery**

Investment recovery will be through standard rate recovery mechanisms.

**2.7.1 Customer Impact**

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.210M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

**3 Related Projects, Scoring, Budgets**

**3.1 Summary of Projects**

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
CRGC403	N/A	System Auto - RI	1.000
<b>Total</b>			<b>1.000</b>

**3.2 Associated Projects**

N/A

**3.3 Prior Sanctioning History**

N/A

**3.4 Category**

Category	Reference to Mandate, Policy, NPV, or Other
<input type="radio"/> Mandatory	National Grid Policy PL 030002 – SCADA Instrument & Control requires that new telemetry points are approved by Gas Control in accordance with the U.S. Department of Transportation - Pipeline and Hazardous Materials Safety Administration (PHMSA) Control Room Management standards (49CFR 192.631).
<input checked="" type="radio"/> Policy- Driven	
<input type="radio"/> Justified NPV	
<input type="radio"/> Other	



**Short Form Sanction Paper**

**3.5 Asset Management Risk Score**

Asset Management Risk Score:   40  

**Primary Risk Score Driver: (Policy Driven Projects Only)**

Reliability       Environment       Health & Safety       Not Policy Driven

**3.6 Complexity Level**

High Complexity       Medium Complexity       Low Complexity       N/A

Complexity Score:   15  

**3.7 Next Planned Sanction Review**

Date (Month/Year)	Purpose of Sanction Review
June 2016	Project Closeout

**4 Financial**

**4.1 Business Plan**

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY16 – FY20_Gas-Budget_File	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Over <input type="radio"/> Under <input checked="" type="radio"/> NA	\$0.000

**4.1.1 If cost > approved Business Plan how will this be funded?**

N/A

**4.2 CIAC / Reimbursement**

\$M	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



**Short Form Sanction Paper**

**4.3 Cost Summary Table**

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total	
					Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +		
					2015/16	2016/17	2017/18	2018/19	2019/20	2020/21		
CRGC403	System Auto - RI	+/- 10%	CapEx	-	1,000	-	-	-	-	-	-	1,000
			OpEx	-	-	-	-	-	-	-	-	-
			Removal	-	-	-	-	-	-	-	-	-
			Total	-	1,000	-	-	-	-	-	-	-
Total Project Sanction			CapEx	-	1,000	-	-	-	-	-	-	1,000
			OpEx	-	-	-	-	-	-	-	-	-
			Removal	-	-	-	-	-	-	-	-	-
			Total	-	1,000	-	-	-	-	-	-	-

**4.4 Project Budget Summary Table**

**Project Costs Per Business Plan**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
CapEx	0.000	1.000	0.000	0.000	0.000	0.000	0.000	1.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	1.000	0.000	0.000	0.000	0.000	0.000	1.000

**Variance (Business Plan-Project Estimate)**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	
		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

**5 Key Milestones**

Milestone	Target Date: Month/Year
Final Engineering Complete	March 2015
Start Applying for Permits	April 2015
Engage Required Resources	April 2015
Construction Start Date	May 2015
Construction Complete	February 2016



**Short Form Sanction Paper**

<b>Commissioning</b>	<b>March 2016</b>
<b>Project Closure Sanction</b>	<b>June 2016</b>

**6 Statements of Support**

**6.1.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

<b>Role</b>	<b>Individual</b>	<b>Responsibilities</b>
<i>Investment Planner</i>	Pensabene, Patrick M.	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Georgacopoulos, Artie	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
<i>Project Management</i>	Moore, Timothy	Endorses Resources, cost estimate, schedule

**6.1.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

<b>Reviewer List</b>	<b>Individual</b>
Finance	Fowler, Keith
Finance	Horowitz, Philip
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Iseler, David
Procurement	Curran, Art
Control Center	Eagan, Mark J.



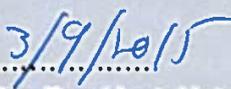
**Short Form Sanction Paper**

**7 Decisions**

I:

(a) APPROVE this paper and the investment of \$1.000M and a tolerance of +/-10%

(b) NOTE that Stephen Greco is the Project Manager and has the approved financial delegation.

Signature  Date 

Executive Sponsor – Ross Turrini, Acting Senior Vice President, Network Strategy

**Short Form Sanction Paper**



**8 Other Appendices**

**8.1 Sanction Request Breakdown by Project**

N/A

**USSC Closure Paper**



<b>Title:</b>	FY16 System Automation and Control – Narragansett	<b>Sanction Paper #:</b>	USSC-15-056C
<b>Project #:</b>	CRGC403, C039264	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	March 30, 2017
<b>Author:</b>	Anthony DellaCamera	<b>Sponsor:</b>	John S. Stavrakas – Vice President, Gas Asset Management
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Stephen Greco

**1 Executive Summary**

This paper is presented to close CRGC403, C039264. The total spend was \$0.797M. The sanctioned amount for this project was \$1.000M.

*The final spend amount is \$0.797M broken down into:*  
*\$0.793M Capex*  
*\$0.000M Opex*  
*\$0.004M Removal*

**2 Project Summary**

The primary purpose of this program is to increase the level of system automation by monitoring and controlling gas pressure, temperature and flow rate at gas regulator stations.

**3 Over / Under Expenditure Analysis**



**USSC Closure Paper**

**3.1 Summary Table**

Actual Spending (\$M)			
Project #	Description		Total Spend
C039264	SYSTEM AUTOMATION	Capex	(0.007)
		Opex	0.000
		Removal	0.000
		<b>Total</b>	<b>(0.007)</b>
CRGC403	SYSTEM AUTOMATION-RI	Capex	0.800
		Opex	0.000
		Removal	0.004
		<b>Total</b>	<b>0.804</b>
<b>Total</b>		Capex	0.793
		Opex	0.000
		Removal	0.004
		<b>Total</b>	<b>0.797</b>

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	1.000
		Opex	0.000
		Removal	0.000
		<b>Total Cost</b>	<b>1.000</b>
Sanction Variance (\$M)			Total Spend
		Capex	0.207
		Opex	0.000
		Removal	(0.004)
		<b>Total Variance</b>	<b>0.203</b>

**3.2 Analysis**

The System Automation and Control program for The Narragansett Electric Co. underspent its budget by 20%. The underspend was driven by resource limitations and project estimating. With a limited number of resources available to perform this work, only a portion of the work plan could be completed. Several project estimates were also higher than the actual spend due to overestimating the amount of labor required by National Grid employees.

**4 Improvements / Lessons Learned**



**USSC Closure Paper**

The company has identified the need to increase the number of available resources and to start work earlier in the year. Starting earlier in the year would allow more of the work plan to be completed. Additionally, the estimating tools are being improved to provide a more accurate forecast to mitigate underspending on individual projects.

**5 Closeout Activities**

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed (1)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed (2)	<input type="radio"/> Yes <input checked="" type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database (3)	<input type="radio"/> Yes <input checked="" type="radio"/> No

- (1) All work orders and funding projects have been closed  
Program/Blanket projects may contain work orders and or funding projects which have not yet been closed for reasons including but not limited to:
- the same work order(s) are used annually. They will remain open until Asset Management and/or Resource Planning have determined work orders are no longer needed.
  - construction may cross multiple fiscal years
  - the work order closing process is within the late charge waiting period
  - other accounting processes or final system closing activities have not yet completed

The Program/Blanket projects are approved annually for the current year expected spend and remain open until Asset Management and/or Resource Planning have determined the project is no longer required.

- (2) All as-builts have been completed



**USSC Closure Paper**

Program/Blanket projects may contain work orders for which no as-builts have yet been recorded for reasons including but not limited to:

- design and/or construction have not yet completed
- construction may cross multiple fiscal years
- work has completed recently and as-builts have not yet been processed into the system
- does not apply. Work order(s) are not linked to work management systems. (example: Meter Purchases, Meter Changes, AMR Installations Purchase Misc Capital Tools/Equipment, etc.)

(3) All lessons learned have been entered appropriately into the lesson learned database

Program/Blanket projects usually contain short cycle work which the Company has been performing over several fiscal years. No new Lessons Learned which have not already been identified and recorded within section 4.

**6 Statements of Support**

**6.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

Department	Individual	Responsibilities
<i>Investment Planner</i>	Pensabene, Patrick M	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Vidal, Alfredo	Endorses Resources, cost estimate, schedule, and Portfolio Alignment
<i>Project Management</i>	Michel, Michael	Endorses Resources, cost estimate, schedule
<i>Gas Project Estimation</i>	Paul, Art	Endorses Cost Estimate

**6.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

Function	Individual
Finance	Easterly, Patricia
Regulatory	Zschokke, Peter
Jurisdictional Delegate	Currie, John
Procurement	Curran, Art
Control Center	Loiacono, Paul

**USSC Closure Paper**



**7 Decisions**

I approve this paper.

Signature *Ross W. Turrini*

Date April 27, 2017

Executive Sponsor – Ross Turrini, Senior Vice President, Gas Process & Engineering  
and Chief Gas Engineer



**Short Form Sanction Paper**

<b>Title:</b>	Combustible Gas Indicator (CGI) Replacement Project - RI	<b>Sanction Paper #:</b>	USSC-14-025
<b>Project #:</b>	C053373	<b>Sanction Type:</b>	Sanction
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	February 4, 2014
<b>Author:</b>	Robert Wilson	<b>Sponsor:</b>	Neil Proudman, Acting VP M&C NY
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Michael Gallinaro

**1 Executive Summary**

**1.1 Sanctioning Summary**

This paper requests sanction of Project C053373 in the amount \$0.519M with a tolerance of +/- 10% for the purpose of purchasing Combustible Gas Indicators (CGI's).

*The sanction amount is \$0.519M broken down into:*

- \$0.519M Capex*
- \$0.000 Opex*
- \$0.000 Removal*
- With a CIAC/Reimbursement of \$0.000*
- With a Salvage Value of \$0.000*

**2 Project Detail**

**2.1 Project Description, Justification, Customer Issues, Drivers and Benefits**

**Project Description**

The purpose of this project is to upgrade and standardize the aging and disparate fleet of combustible gas indicators and instrument management systems to a fail-safe “compliant smart” technology platform that ensures 100% compliance with instrument maintenance and calibration mandates. Combustible gas indicators are one of the most important tools utilized in the gas business. These instruments are the primary tool used to determine and classify gas leaks and ensure employee safety while working on gas systems, entering confined spaces and investigating odor complaints within customer homes and businesses. Proper use of these instruments requires strict calibration and maintenance as prescribed by manufacturer instructions and as mandated in both Federal and jurisdictional code. Combustible Gas Indicator compliance violations (equipment calibration, labeling, process management) is one of the largest non-



### **Short Form Sanction Paper**

compliance issues National Grid faces with up to 30-40% of violation “occurrences” associated with “Instrument Calibration & Verification” in some regions. Recent Internal Audits in all jurisdictions have confirmed the need for immediate improvements in instrument technology and management to ensure public safety and minimize risk of non-compliance.

### **Justification**

Recent industry incidents including the tragic consequences of the San Bruno incident have resulted in a paradigm shift in how the industry views pipeline safety regulatory compliance. Increasing pressure from both policy makers in Washington and regulatory oversight authorities including NTSB and DOT to “hold Operators more accountable for their actions” has resulted in a trickle down effect which is impacting State Regulatory programs and associated penalty structures. Policy makers have committed to “change behavior” of Operators (both gas and liquid pipeline operations) by introducing stiff financial penalties for pipeline safety regulatory compliance violations. Generally, financial penalties were reserved for the most egregious violations that resulted in significant injury or loss of life, loss of property (typically exceeding \$50,000) and/or substantial impacts to the environment. Penalty structures and historical financial penalty action resulting from pipeline safety related audits (both “paper” ( record audits) as well as field audits) has historically varied across jurisdictions for National Grid ranging from no fines in New York up through use of Federal guidelines in both MA and RI (typically \$10,000 per violation / \$100,000 for a series of related violations. Recent pipeline safety performance metrics introduced in New York have resulted in some of the most stringent penalty structures in the country with 100 basis points “at risk” (approximately \$18 Million) for BUG. More importantly, in addition to the financial risk, the Company faces substantial reputation risk associated with these potential violations (additional details are provided in Appendix 1).

### **Benefits**

This project will significantly reduce non-compliance events associated with instrument calibration and management by deploying an enhanced “smart” technology that ensures the instrument is properly calibrated prior to use in accordance with all regulatory mandates. The instruments include automatically shutdown if not calibrated within 30 days per the mandate and includes a clock type reminder mechanism to alert the Operator of the calibration requirement. This project has a potential cost avoidance benefit based on new Federal penalty structures for a series of related violations (repeat violations) of up to \$2,000,000 per year.



**Short Form Sanction Paper**

**2.1.1 Alternatives:**

Considering the current regulatory environment coupled with recommendations identified in the Compliance Improvement Plan and confirmed by recent Internal Audits, the only recommended option is instrumentation upgrade and replacement to the advanced compliance technology platform.

Note: This recommendation is consistent with a recent UK program (see attached UK Assessment & Sanction Document in Appendix 2).

**Alternative 1: Do Nothing** – potential to incur financial penalties in excess of \$500,000 annually and risk significant potential reputation damage. Use of an improperly calibrated instrument could lead to public safety risk.

**2.2 Investment Recovery**

Investment recovery will be through standard rate recovery mechanisms.

**2.2.1 Customer Impact**

This project results in an indicative first full year revenue requirement when the asset is placed in service equal to approximately \$0.104M. This is indicative only. The actual revenue requirement will differ, depending upon the timing of the next rate case and/or the timing of the next filing in which the project is included in rate base.

**3 Related Projects, Scoring, Budgets**

**3.1 Summary of Projects:**

Project Number	Project Type (Elec only)	Project Title	Estimate Amount (\$M)
C053373		CGI Replacement Program - RI	0.519
<b>Total</b>			<b>0.519</b>



**Short Form Sanction Paper**

**3.2 Associated Projects:**

Project Number	Project Title	Estimate Amount
<b>Total</b>		\$ -

**3.3 Prior Sanctioning History (including relevant approved Strategies):**

Date	Governance Body	Sanctioned Amount	Paper Title	Sanction Type

**3.4 Category:**

Category	Reference to Mandate, Policy, or NPV Assumptions
<input checked="" type="radio"/> Mandatory <input type="radio"/> Policy- Driven <input type="radio"/> Justified NPV	This project is necessary for compliance with mandated federal and jurisdictional code requirements associated with ensuring calibration of combustible gas analysis instrumentation. There is potentially hundreds of thousands of dollars in violation fine avoidance annually by migrating to a "fail safe" compliance technology platform. The UK recently standardized on the same technology and this program is part of the US Gas Business Compliance Improvement Plan; required to resolve several internal audit findings/commitments.

**3.5 Asset Management Risk Score**

Asset Management Risk Score: 49

**Primary Risk Score Driver:** (Policy Driven Projects Only)

- Reliability     
 Environment     
 Health & Safety     
 Not Policy Driven



**Short Form Sanction Paper**

**3.6 Complexity Level:**

High Complexity     Medium Complexity     Low Complexity     N/A

Complexity Score:   15  

**4 Financial**

**4.1 Business Plan:**

Business Plan Name & Period	Project included in approved Business Plan?	Over / Under Business Plan	Project Cost relative to approved Business Plan (\$)
FY14 - FY18 Budget File - Gas	<input type="radio"/> Yes <input checked="" type="radio"/> No	<input checked="" type="radio"/> Over <input type="radio"/> Under <input type="radio"/> NA	\$0.519M

**4.1.1 If cost > approved Business Plan how will this be funded?**

Reallocation of funds within the portfolio will be managed by Resource Planning to meet jurisdictional budgetary, statutory and regulatory requirements.

**4.2 CIAC / Reimbursement**

\$M	Prior Yrs	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6 +	Total
		2013/14	2014/15	0	0	0	0	
CIAC/Reimbursement	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



**Short Form Sanction Paper**

**4.3 Cost Summary Table**

Project Number	Project Title	Project Estimate Level (%)	Spend	Prior Yrs	Current Planning Horizon (\$M)						Total	
					Yr. 1 2013/14	Yr. 2 2014/15	Yr. 3 0	Yr. 4 0	Yr. 5 0	Yr. 6 + 0		
C053373	CGI Replacement Program - RI	+/- 10%	CapEx	-	-	0.519	-	-	-	-	-	0.519
			OpEx	-	-	-	-	-	-	-	-	-
			Removal	-	-	-	-	-	-	-	-	-
			Total	-	-	0.519	-	-	-	-	-	-
Total Project Sanction			CapEx	-	-	0.519	-	-	-	-	-	0.519
			OpEx	-	-	-	-	-	-	-	-	-
			Removal	-	-	-	-	-	-	-	-	-
			Total	-	-	0.519	-	-	-	-	-	0.519

**4.4 Project Budget Summary Table**

**Project Costs per Business Plan**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2013/14	Yr. 2 2014/15	Yr. 3 0	Yr. 4 0	Yr. 5 0	Yr. 6 + 0	
CapEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

**Variance (Business Plan-Project Estimate)**

\$M	Prior Yrs (Actual)	Current Planning Horizon (\$M)						Total
		Yr. 1 2013/14	Yr. 2 2014/15	Yr. 3 0	Yr. 4 0	Yr. 5 0	Yr. 6 + 0	
CapEx	0.000	0.000	(0.519)	0.000	0.000	0.000	0.000	(0.519)
OpEx	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Removal	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Cost in Bus. Plan	0.000	0.000	(0.519)	0.000	0.000	0.000	0.000	(0.519)

**5 Key Milestones:**

Milestone	Target Date: (Month/Year)
Sanction Project	February 2014
Secure Purchase Order	February 2014
Deliver Instruments & Deploy	June 2014
Closure Paper	August 2014



**Short Form Sanction Paper**

**6 Statements of Support**

**6.1.1 Supporters**

<b>Role</b>	<b>Name</b>	<b>Responsibilities</b>
<i>Investment Planning</i>	Patrick Pensabene	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Artie Georgacopoulos	Endorses Resources, cost estimate, schedule and Portfolio Alignment

**6.1.2 Reviewers**

Reviewers read the paper for content / language and recommends edits if necessary.

<b>Reviewer List</b>	<b>Name</b>
Finance	Keith Fowler
Regulatory	Benjamin Ryan
Jurisdictional Delegates	Walter Fromm
Control Center	Thomas Amerige
Procurement	Art Curran

**Short Form Sanction Paper**



**7. Decisions:**

I:

(a) APPROVE this paper and the investment of \$0.519M and a tolerance of +/- 10%.

(b) NOTE that Michael Gallinaro is the Project Manager and has the approved financial delegation.

Signature..........Date 2-5-14

Executive Sponsor – John Donleavy, Chief Operating Officer



***Short Form Sanction Paper***

***8. Other Appendices:***

**Appendix 1 – Executive Summary & Instrument Evaluation Study**

**Appendix 2 – UK Sanction Paper Reference**

**8.1 Sanction Request Breakdown by Project (Partial Sanction only)**

N/A



**Closure Paper**

<b>Title:</b>	Combustible Gas Indicator (CGI) Replacement Project - RI	<b>Sanction Paper #:</b>	USSC-14-025C
<b>Project #:</b>	C053373	<b>Sanction Type:</b>	Closure
<b>Operating Company:</b>	The Narragansett Electric Co.	<b>Date of Request:</b>	10/10/2017
<b>Author:</b>	Michael Gallinaro	<b>Sponsor:</b>	Neil Proudman, NE Gas Ops & Construction VP
<b>Utility Service:</b>	Gas	<b>Project Manager:</b>	Michael Gallinaro

**1 Executive Summary**

This paper is presented to close C053373. The total spend was \$0.570M. The sanctioned amount for this project was \$0.519M.

*The final spend amount is \$0.570M broken down into:*

- \$0.570M Capex*
- \$0.000M Opex*
- \$0.000M Removal*

**2 Project Summary**

The purpose of this project is to upgrade and standardize the aging and disparate fleet of combustible gas indicators and instrument management systems to a fail-safe "compliant smart" technology platform to enable compliance with instrument maintenance and calibration mandates. Combustible gas indicators are one of the most important tools utilized in the gas business. These instruments are the primary tool to determine and classify gas leaks and ensure employee safety while working on gas systems, entering confined spaces and investigating odor complaints within customer homes and businesses. Proper use of these instruments requires strict calibration and maintenance as prescribed by manufacturer instructions and as mandated in both Federal and jurisdictional code. Combustible gas indicator compliance violations (equipment calibration, labeling, process management) are among the largest non-compliance issues National Grid faces, with up to 30-40% of violation "occurrences" associated with "Instrument Calibration & Verification" in some regions. Recent Internal Audits in all jurisdictions have confirmed the need for immediate improvements in instrument technology and management to improve safety and minimize risk of non-compliance.



**Closure Paper**

**3 Over / Under Expenditure Analysis**

**3.1 Summary Table**

Actual Spending (\$M)			
Project #	Description		Total Spend
C053373	CGI Deployment	Capex	0.570
		Opex	0.000
		Removal	0.000
		<b>Total</b>	<b>0.570</b>
<b>Total</b>		Capex	0.570
		Opex	0.000
		Removal	0.000
		<b>Total</b>	<b>0.570</b>

Project Sanction Summary Table			
Project Sanction Approval (\$M)			Total Spend
		Capex	0.519
		Opex	0.000
		Removal	0.000
		<b>Total Cost</b>	<b>0.519</b>
Sanction Variance (\$M)			Total Spend
		Capex	(0.051)
		Opex	0.000
		Removal	0.000
		<b>Total Variance</b>	<b>(0.051)</b>

**3.2 Analysis**

The variance is (9.8%) which is within the tolerance of +/- 10%.



**Closure Paper**

**3.3 Schedule Variance**

Schedule Variance	
Project Grade - Ready for Use Date	6/1/2014
Actual Ready for Use Date	11/20/2015
Schedule Variance	1 years, 5 months, 19 days

**4 Improvements / Lessons Learned/Root Cause**

- Improve development of estimating practices.
- Work with Finance and Resource Planning to create better financial metrics.
- Create Long Term resource requirements for future Capital planning.
- Identify carryover or deferred projects in a timely fashion.

**5 Closeout Activities**

The following closeout activities have been completed.

Activity	Completed
All work has been completed in accordance with all National Grid policies	<input checked="" type="radio"/> Yes <input type="radio"/> No
All relevant costs have been charged to project	<input checked="" type="radio"/> Yes <input type="radio"/> No
All work orders and funding projects have been closed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All unused materials have been returned	<input checked="" type="radio"/> Yes <input type="radio"/> No
All as-builts have been completed	<input checked="" type="radio"/> Yes <input type="radio"/> No
All lessons learned have been entered appropriately into the lesson learned database	<input checked="" type="radio"/> Yes <input type="radio"/> No



**Closure Paper**

**6 Statements of Support**

**6.1 Supporters**

The supporters listed have aligned their part of the business to support the project.

<b>Department</b>	<b>Individual</b>	<b>Responsibilities</b>
<i>Investment Planning</i>	Patrick Pensabene, Philip Quan	Endorses relative to 5-year business plan or emergent work
<i>Resource Planning</i>	Jonathan Falls	Endorses resources, cost estimate, schedule and portfolio alignment
Project Management	Joseph Fortier	Endorses resources, cost estimate, schedule
Gas Project Estimation	Art Paul	Endorses cost estimate

**6.2 Reviewers**

The reviewers have provided feedback on the content/language of the paper.

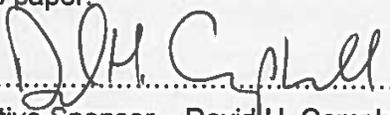
<b>Function</b>	<b>Individual</b>
Finance	Felicia Midkiff
Regulatory	Renee Gurry
Jurisdictional Delegate	John Currie
Procurement	Art Curran
Control Center	Paul Loiacano



**Closure Paper**

**7 Decisions**

I approve this paper.

Signature.....  ..... Date... 10/13/17...

Executive Sponsor – David H. Campbell, Vice President ServCo Business Partnering, USSC Chair

Funding Project Information		Details	
Description	Discretionary - Maintain RI	Funding Proj	CRFC501
Company	5360-Narragansett Electric		
Bus Segment	RIGASD	Last Approved Rev	5
Budget	CRFC501	Status	open
Department	78855360G - FieldOp-NE-R	F. P. Type	P_Gas Distribution Construction RI
FP ID	381857049		
Long Description	Discretionary - Maintain RI		
Major Location	MASS PLANT - RI (Gas)	Asset Location	
Asset Loc Det			
Notes			
Reason		Approval Group	<none>
Est Start Date	4/1/2017	Late Charge Wait	0 Months
Est Complete	3/31/2018	In Service Date	
Est In Service	3/31/2018	Completion Date	
Est Annual Rev		First CPR Month	
Initiated By	PHILPD	Close Date	
Date Suspended		Date Initiated	9/11/2013

Audits
Delete FP
Cancel FP
Suspend FP
Estimates
Update
Print
Close

Record 1 of 1    < < > >

Funding Project Information
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<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"><b>Title</b></td> <td style="border: 1px solid gray; padding: 2px;">Discretionary - Maintain RI</td> </tr> <tr> <td><b>Funding Project</b></td> <td style="border: 1px solid gray; padding: 2px;">CRFC501</td> </tr> </table>	<b>Title</b>	Discretionary - Maintain RI	<b>Funding Project</b>	CRFC501		<div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Details</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Accounts</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Contacts</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Class Codes</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Justification</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Tax Status</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Authorizations</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">User Comment</div> <div style="border: 1px solid gray; padding: 2px; margin-bottom: 2px;">Review</div>	
<b>Title</b>	Discretionary - Maintain RI						
<b>Funding Project</b>	CRFC501						

**Class Codes**

<b>Budget Plant Class</b>		
<b>Send to SE</b>		
<b>Miscellaneous Billing</b>		
<b>Misc Billing Status</b>		
<b>Required</b>		
<b>Force Billing Flag</b>		
<b>RDV Allocation Eligible</b>		
<b>Sanctioning Data</b>		
<b>DOA Amount</b>		
<b>Lower Tolerance</b>	.90	
<b>Strategy Type Name</b>		
<b>Upper Tolerance</b>	1.10	

Indicates Display Only - (d) ▾

Audits

Delete FP

Cancel FP

Suspend FP

Estimates

Update

Print

Close

Record	1	of	1	<	<	>	>
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Funding Project Information
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**New Approval Type**

**Funding Project**  **Revision**

**Approval Type**  **Amount**

**Status**  **Sent By**  **Date Sent**  **Date Appr**

	Approver	Required	Date Approved	Authority Limit
+ Approver 1 -----	<input type="text" value="Fromm, Walter F"/>	<input checked="" type="checkbox"/>	6/22/2015	\$1,000,000

**Budget Version**

Rev

Record  of 1